

MINING DEPARTMENT

OCTOBER 1947

Construction Methods

A McGRAW-HILL
PUBLICATION



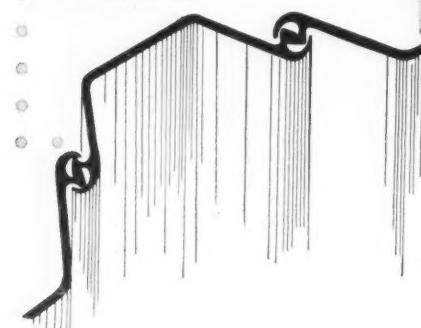
250-ton floating derrick at front and pair
of gallows frame hoists at rear raise coal
dumper at Edgewater, N. J.

Rail and Wagon Haul on Merriman Dam Fill

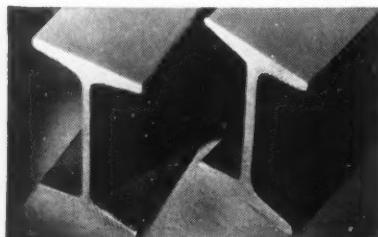
Also: Heavy Coal Dumper Lift • Corrugated White Concrete Traffic Markers
Precast Australian Houses • Deep Sewer Tunnel • Road-Topped Seawall



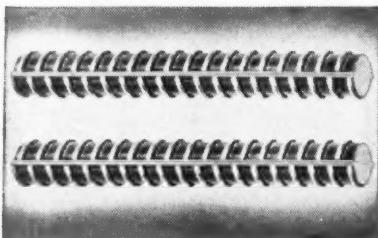
**THIS
INTERLOCKING
GRIP
MEANS—**



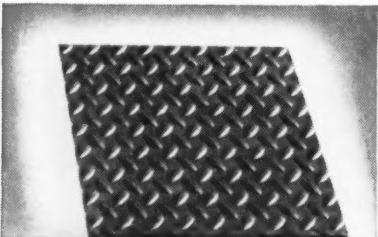
For the Contractor—Inland also supplies:



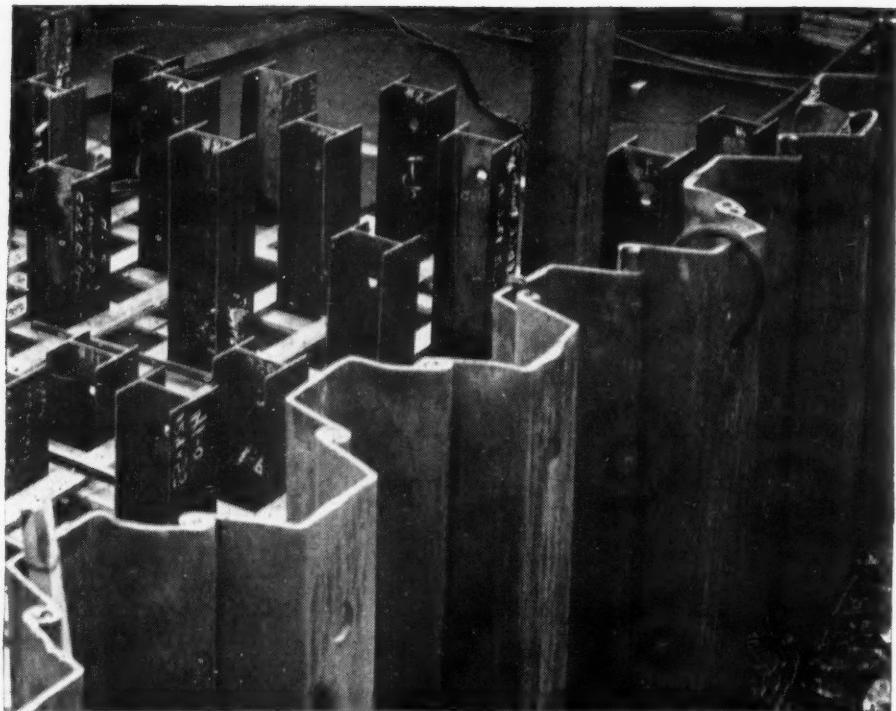
I-Beams and other structural shapes—



Hi-Bond concrete reinforcing bars—



4-Way safety steel floor plate—



INLAND PILING IS ON THE JOB

The construction industry knows and appreciates this popular interlocking grip and the other advantages of Inland sheet piling. Straight—strong and tough, it drives freely, produces water-tight cofferdams under pressure, and can be pulled and redriven time after time. Actual cases are on record where Inland Piling has been reused as many as fifteen times.

Accurately rolled with uniform high quality, Inland sheet piling is made of special analysis steel for extreme strength and resistance to corrosion. Eight different sections are available for various applications on single or double wall cofferdams, cellular breakwaters, docks, bulkheads or retaining walls. Piling may also be rented, when available.

Inland engineers are at your service to assist—in design, layout and selection of proper material for your installations. They may also be able to help you with practical operating suggestions. Call on them at any time.

ILLUSTRATION ABOVE: Inland sheet piling used on cofferdam for Illinois river bridge. Great Lakes Dredge & Dock Co., Contractors.

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INLAND STEEL COMPANY, 38 South Dearborn Street, Chicago 3, Illinois. Sales Offices: Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Paul, St. Louis

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Construction Methods

WALDO G. BOWMAN, Editor

THE CONSTRUCTION MAGAZINE WITH PICTURE POWER

Established 1919

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OCTOBER 1947 Volume 29 • Number 10

CUTS AND FILLS

IN THIS ISSUE

RECENT DECISION by the American Road Builders Association to hold a full convention along with the Road Show at Chicago next July 16-24 assures even greater attendance at the big spectacle. Better get your hotel reservations into the Association's office, International Bldg., Washington, D. C., right away, for the big town will be crowded those days. The ARBA meeting scheduled for Washington late in January will be confined to technical committee sessions.

THREE LEVEE BUILDERS from Memphis gave the Corps of Engineers a jolt when they bid \$6,349,000 for the first stage of Garrison Dam, a million and a half below the engineers' estimate and \$1,200,000 under the next bid. The engineers recovered in a hurry to award the contract before somebody changed his mind. Perhaps this is the start of a reversal of the monotonous trend of bids being way above engineers' estimates. We're betting on the fellows from Memphis, who, no doubt, figure there is nothing in North Dakota that can top the tough conditions they have battled for so long on the Lower Mississippi.

BIGGEST COMPLAINT from building trade employers revealed by a McGraw-Hill Publishing Co. survey on labor conditions is union insistence on more workers than necessary on jobs. So-called featherbedding runs high in the construction trades despite shortage of manpower in many classifications, according to reports received. Recent union ruling that no machine operator can be shifted more than once per day from one rig to another is an example of the silly labor requirements contractors must put up with. Featherbedding is responsible for no small share of current high construction costs.

AN AID to engineering schools teaching construction practices will be an excellent slide film on performance of shovels, cranes and draglines just completed by

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the Power Crane and Shovel Association. They did a real educational job on this film, which depicts the basic design, operation and capabilities of these machines with trademarks eliminated. If interested, get in touch with the association at 74 Trinity Pl., New York 6, New York.

QUOTED in full from Morrison-Knudsen Co.'s magazine:
"In last month's issue The Em Kayan touched a new low of inaccuracy in re-

porting the building being erected by M-K for Standard Oil Company at El Segundo, Calif. The building is 300 ft. long (reported 160), it is 100 ft. wide (reported 40), and 42 ft. high (reported 30). It is a boiler shop (reported machine shop). And, to complete the misinformation, it was said Superintendent Joe Marshall when in Mexico had broken his leg when it was his ribs. We have an alibi, but who'd believe it?" Brother, we know just how you feel.

McGRAW-HILL PUBLISHING COMPANY, INC. • 330 WEST 42nd STREET, NEW YORK 18, N. Y.

JAMES H. McGRAW, Founder and Honorary Chairman

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His Sense Saved My Dollars!

Talk about a money-saving idea, this one that my Oliver "Cletrac" dealer suggested really takes a prize! We were doing the dirt moving on this ground-leveling job, and what with high costs and weather troubles, were getting a little worried about both time and money.

Our Oliver "Cletrac" man came out to look over the job one day, and I did a little high-class beefing about the whole thing. Then he popped this one. "Why not build a sunken loading platform to load out the trucks?" he asked. "Then your tractor-scraper unit can haul the dirt up on the platform and dump it through an opening into the truck body. You'll eliminate a shovel and save a lot of time that way, and time is money these days."

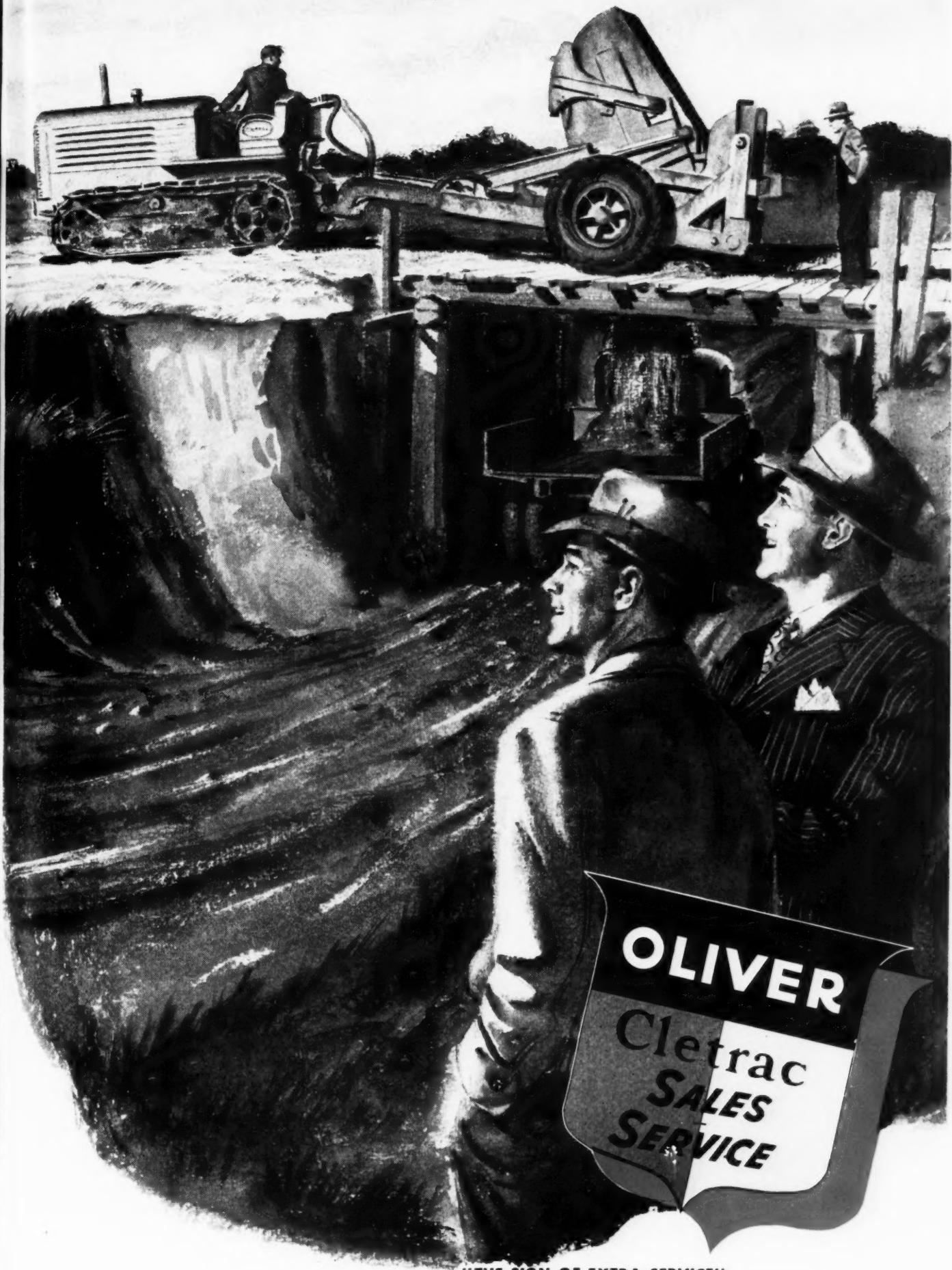
It was a darn good idea—one we just had overlooked. We went to work on it right away and believe me, it really saved our hides. That Oliver "Cletrac" man sure knows the dirt-moving business and he's a good man to know!

Cletrac

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"THE SIGN OF EXTRA SERVICE"

THE JOB JESTER

CARTOONS DRAWN FOR



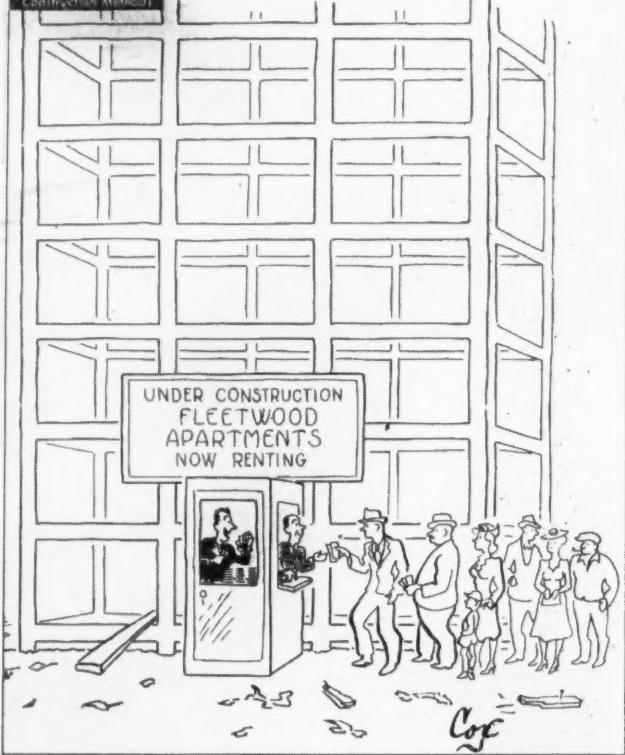
CONSTRUCTION METHODS

Construction Methods



"They'd like a word with you at the front office, Charley."

Construction Methods

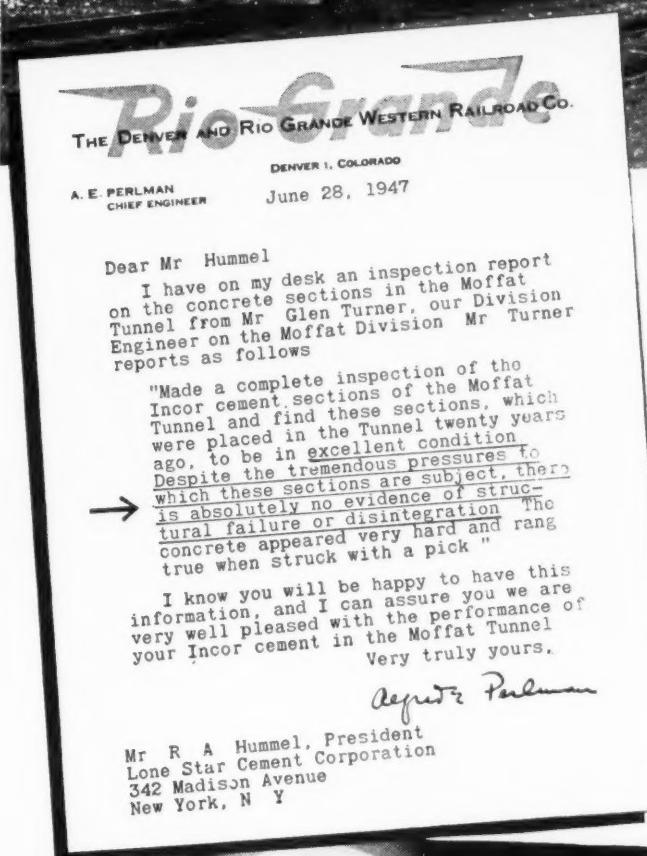
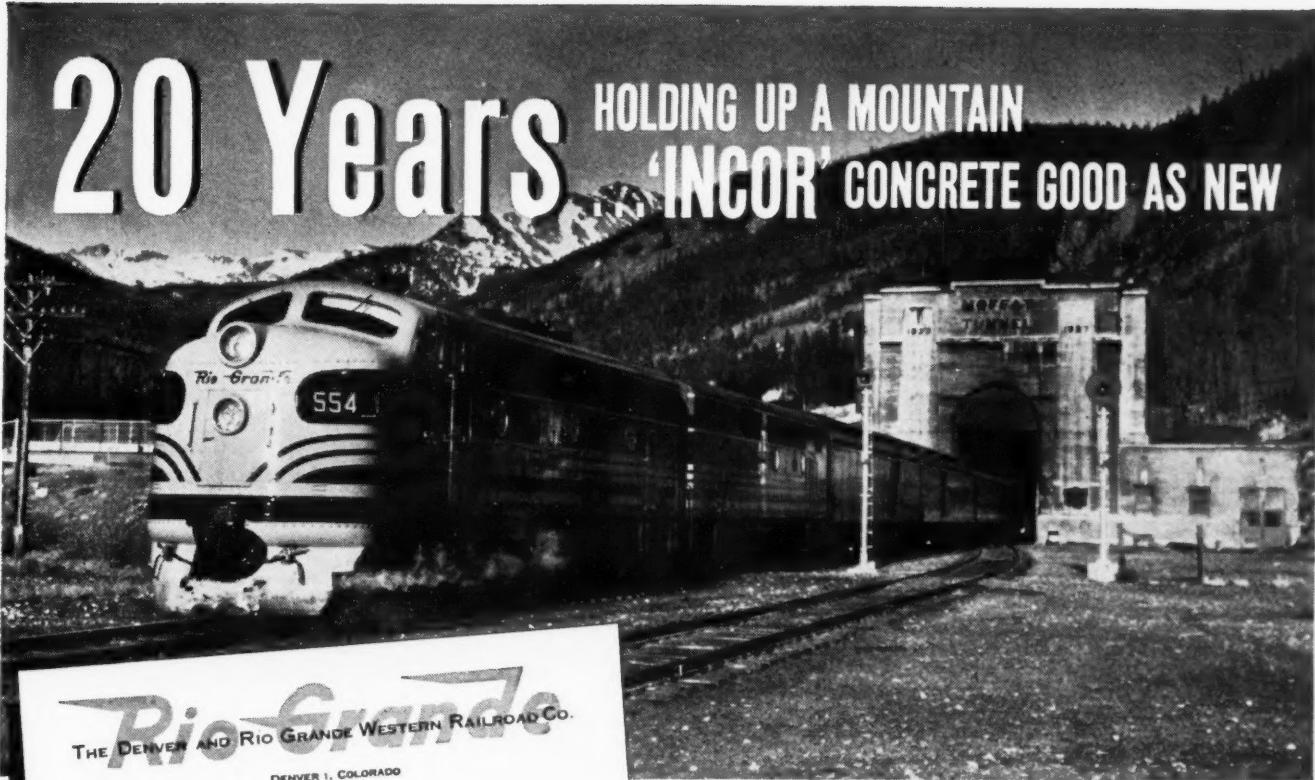


"Okay, Steve. We've collected enough money to buy bricks."

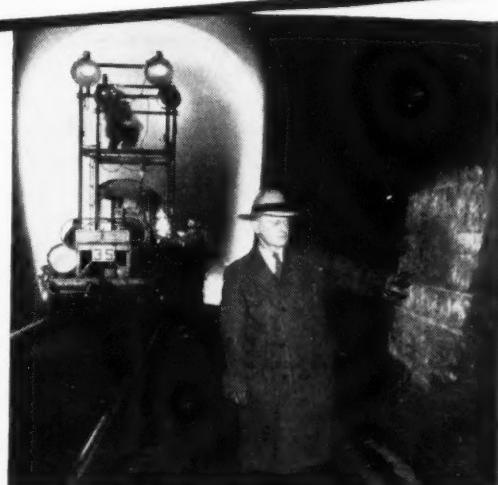
Construction Methods



"Hey, Al! Hold it! You're running ahead of the steel!"



Letter, above, tells of outstanding 'Incor' performance in Moffat Tunnel. Right: Glen Turner, Division Engineer, Denver & Rio Grande, examining 20-year-old 'Incor' concrete—holding up a mountain, blocking off ground waters—a generation of service and not a dollar for maintenance.



20 Years HOLDING UP A MOUNTAIN 'INCOR' CONCRETE GOOD AS NEW

A NEW ERA IN CONCRETE BEGAN

TWENTY years ago, the Moffat Tunnel was being driven six miles through the Rockies. Masses of soft rock and earth, sagging under the Mountain's weight—pressures up to 10 tons per sq. ft.—had to be held in check. Ordinary concrete hardened too slowly... concrete that gained strength, *fast and sure*, was needed and needed badly.

Years before, anticipating the needs of construction progress, Lone Star Cement technicians began rearranging the chemical structure of Portland cement. And so it was that 'Incor', America's FIRST high early strength Portland cement, was available—and on time. 'Incor' concrete withstood the almost fabulous pressures... held up the mountain... has been holding it up ever since... not a dollar for maintenance.

Just how well has 'Incor' performed through the years? A 20-year Condition Survey has just been completed. Chief Engineer Perlman's letter—"despite the tremendous pressures, there is absolutely no evidence of structural failure"—keynotes a report of *outstanding 'Incor' performance across the entire range of construction*.

A new era in concrete began 20 years ago at Moffat Tunnel. Dependable 'Incor'* high early strength that held up a mountain then, holds down construction costs now. Today, more than ever, this is the 'INCOR' ERA.

*Reg. U.S. Pat. Off.

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Bottom - Dump Euclids are designed and built for the specific job of moving big loads over off-the-highway hauls at the lowest cost per ton or yard moved. Here are some of the reasons for the outstanding production and performance records of Bottom-Dump Euclids on a wide range of earth moving jobs:

SPEED AND CAPACITY . . . loaded top speeds to 31.6 m.p.h. and capacities of 13 to 24 cu. yds. struck measure or 20 to 36 ton payloads; diesel engines of 150 to 275 h.p.

EASE OF HANDLING . . . short wheel base of tractor and the universal hitch permit sharp, fast turns and provide excellent maneuverability.

QUICK, CLEAN DUMPING . . . full length and width door openings and smooth, steep hopper sides shed the load quickly for non-stop dumping.

TRACTION AND FLOTATION . . . excellent weight distribution achieved by wedge shaped hopper of trailer and the Euclid hitch design . . . a large percentage of the trailer and payload weight is carried on the drive wheels for good traction . . . large single drive and trailer tires assure excellent flotation for soft haul roads and fills.

These are just a few of the Euclid features that add up to efficient off-the-highway hauling and greater profits for owners. Your Euclid Distributor or Representative will be glad to supply complete data on all current models of Euclid earth moving equipment.

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Continental Motors Corporation
MUSKEGON, MICHIGAN



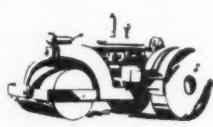
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This B.F. Goodrich tire has double bruise protection

USERS of B.F. Goodrich Universals report fewer bruises, longer wear, greater all-round savings.

Note the thick, heavy lugs on the B.F. Goodrich Universals shown above. Note the tread; natural running action pushes mud and dirt toward the edges of the tread, makes it self-cleaning. Traction is improved. The two-way tread design provides identical traction in either direction—and resists side-slipping!

And in addition, a *double* shock shield is used in B.F. Goodrich off-the-road tires. It consists of four layers of nylon cords between the tread and the

body plies. These nylon layers are in pairs, one pair running at scientifically determined angles with the other pair to give strength...double protection!

The nylon cords in each layer run parallel, fully insulated in live rubber. Under impact, the cords in the shields stretch together, *not* across each other, and return to their original position. Because of this principle, sharp impacts are *distributed*, absorbed. The stronger, more elastic nylon cords actually shield the rayon cord body.

No make of tire other than B.F. Goodrich gives you the added protection of the double nylon shock shield

...the additional saving through (1) longer tire life (2) increased number of recappable tires (3) increased bruise resistance (4) less danger of tread separation.

Find out how B.F. Goodrich can help you solve your tire problems. See the B.F. Goodrich dealer or write us direct. *The B.F. Goodrich Company, Akron, Ohio.*

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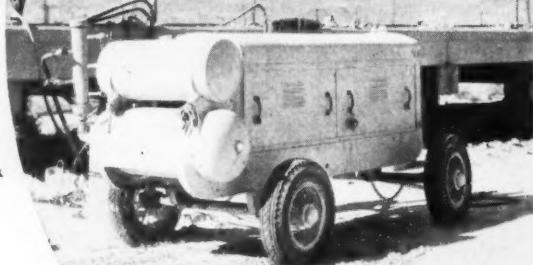
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Easy loading—with proper pitch to cutting edge to give live, boiling action to dirt.

Proper location of draft point for maximum digging ability.

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High ground clearance, with low center of gravity for stability.

Simplicity of design for low upkeep.

NEW GAR WOOD TIPDOZERS and DOZECASTERS for the HD-19 have these job proven features:

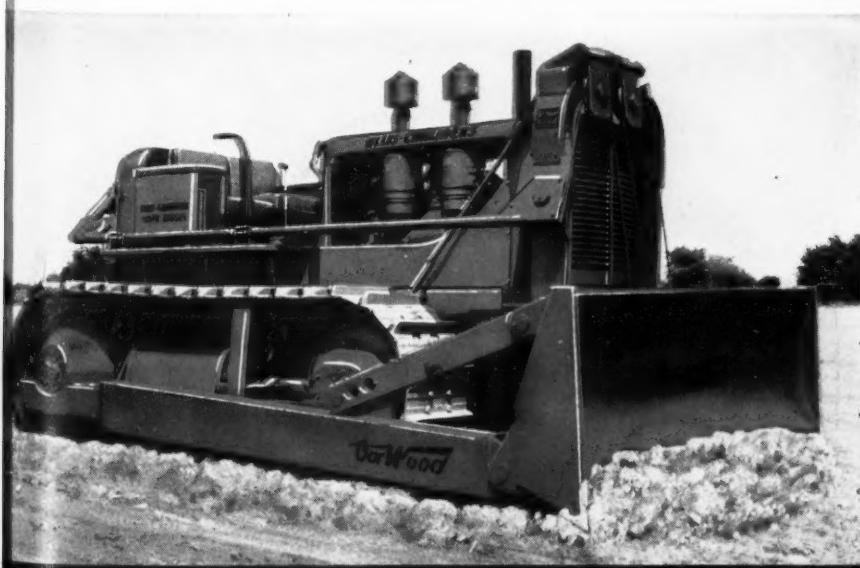
Curved moldboard to keep live load ahead of blade.

Better balance with moldboard closer to tractor radiator.

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Improved operator vision and safety.

New simplified design gives clean cut appearance.



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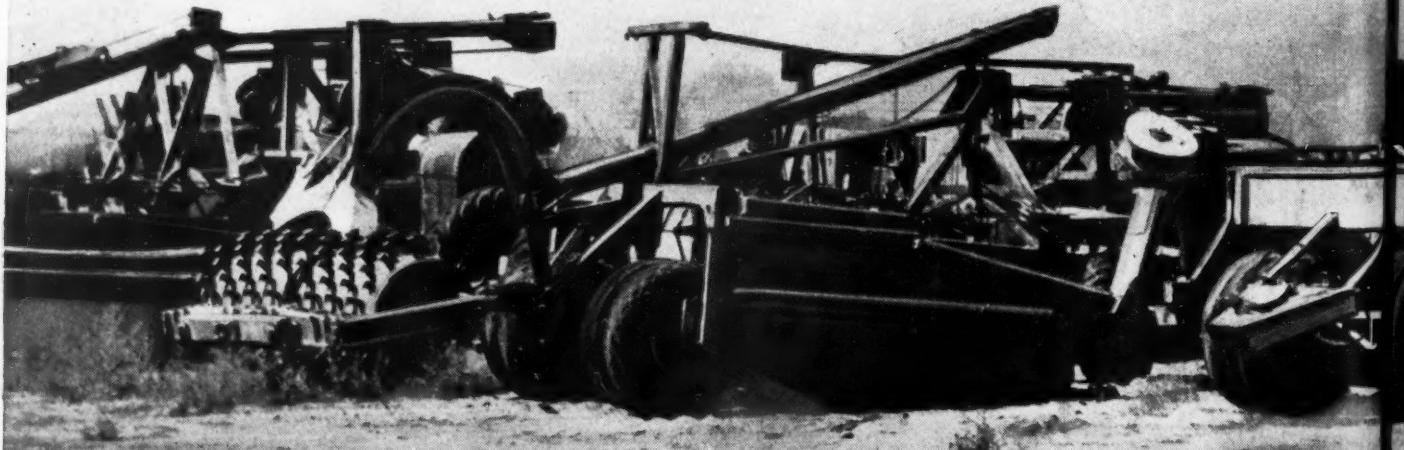
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presents the
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time and station.



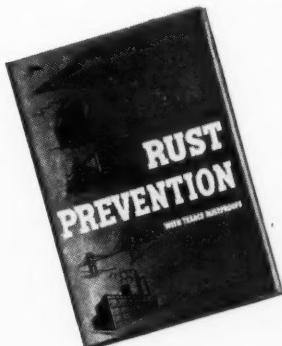
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WHEN YOU lay up your equipment, brush *Texaco Rustproof Compound* over all exposed metal surfaces. They'll be safely and economically protected against rust by a soft, self-healing, *waterproof* film that removes easily when your equipment goes into service again.

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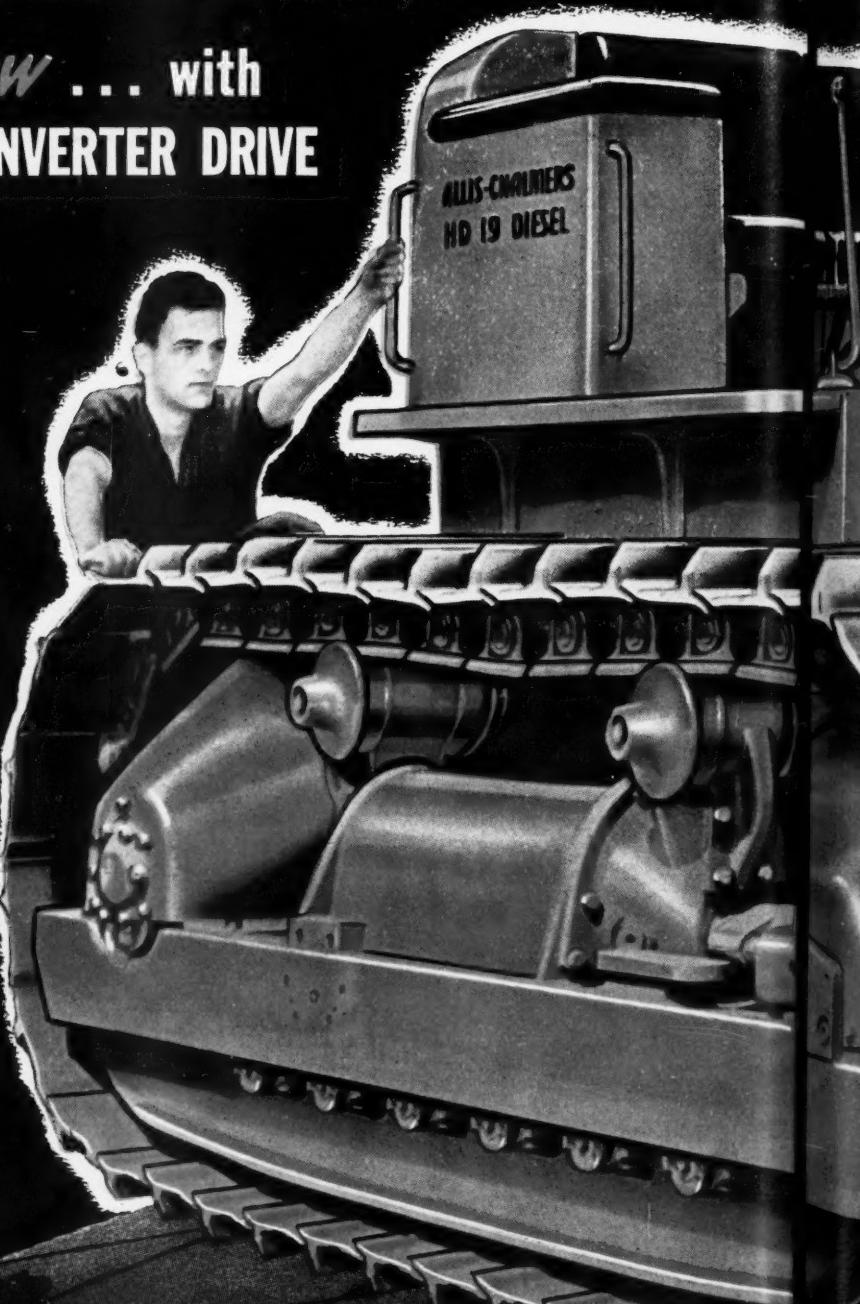
- Weight: 40,000 pounds.
- Power: 2-Cycle General Motors Diesel — 163 hp. at flywheel.
- Torque converter automatically balances load and speed without gear-shifting.
- Speeds: 0 to 3.0 in low gear and 0 to 7.0 in high; reverse, 0 to 5.5.
- More traction, more ground contact, better balance.

BUILT TO LAST LONGER, WITH LESS UPKEEP

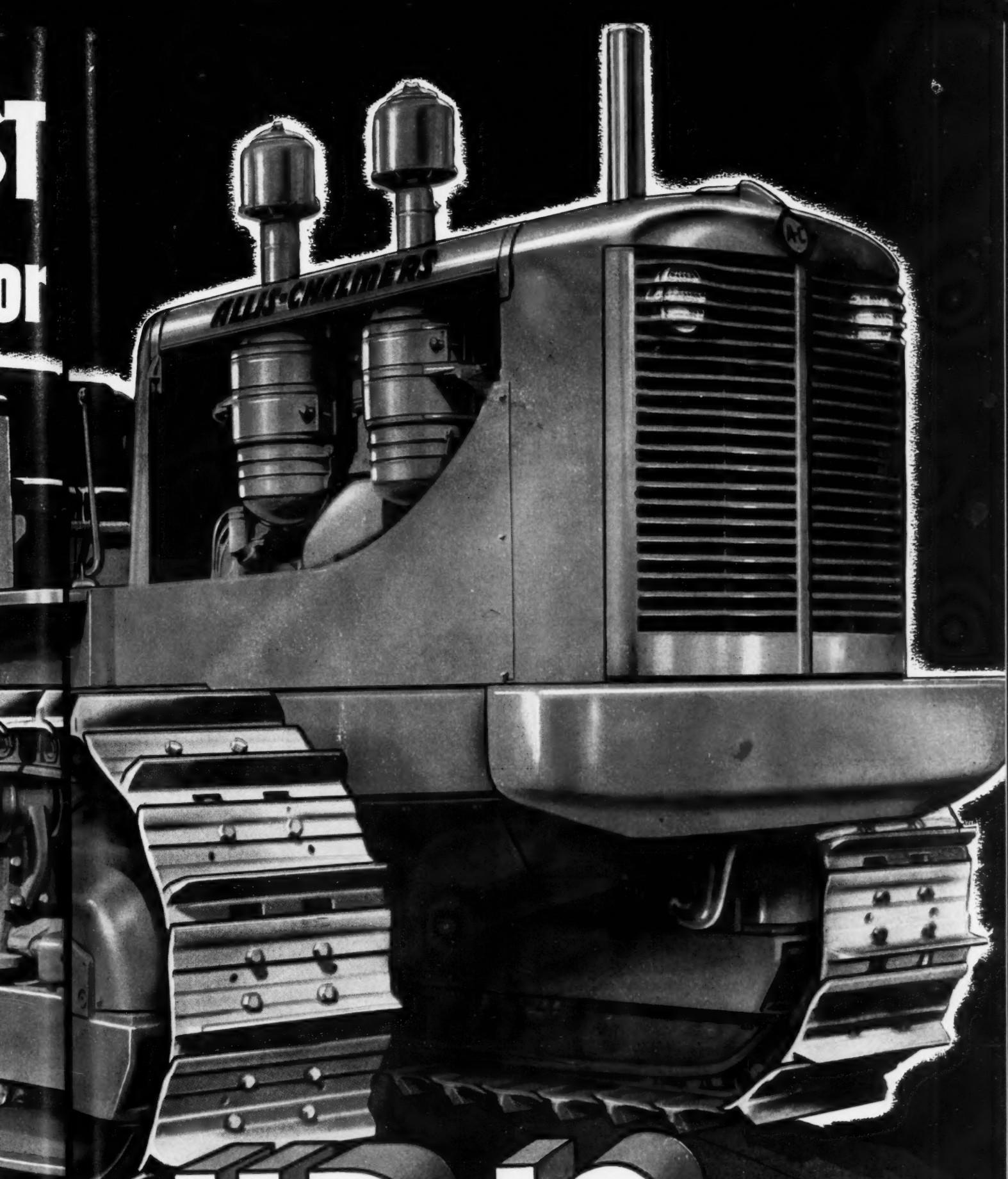
- Torque converter smooths tractor performance — cushions engine and transmission from shock loads.
- Simplified maintenance — major assemblies conveniently serviced or removed. Operating adjustments easily reached, quickly made.
- Reduced lubrication — greasing intervals lengthened throughout . . . 1,000 hours on truck wheels, support rollers, front idlers.
- High clearance — over 16 inches.

BUILT FOR EASIER CONTROL AND GREATER OPERATOR COMFORT

- Torque converter eliminates most shifting.
- Hydraulic, finger-tip steering.
- Convenient controls.
- Self-energizing brakes.
- New type, adjustable split seat.
- Wide arm rests.
- Adjustable brake pedals.
- Full visibility.
- Comfortable foot rests.
- Clean platform.



ALLIS-CHALMERS
TRACTOR DIVISION . . . MILWAUKEE 1, U. S. A.

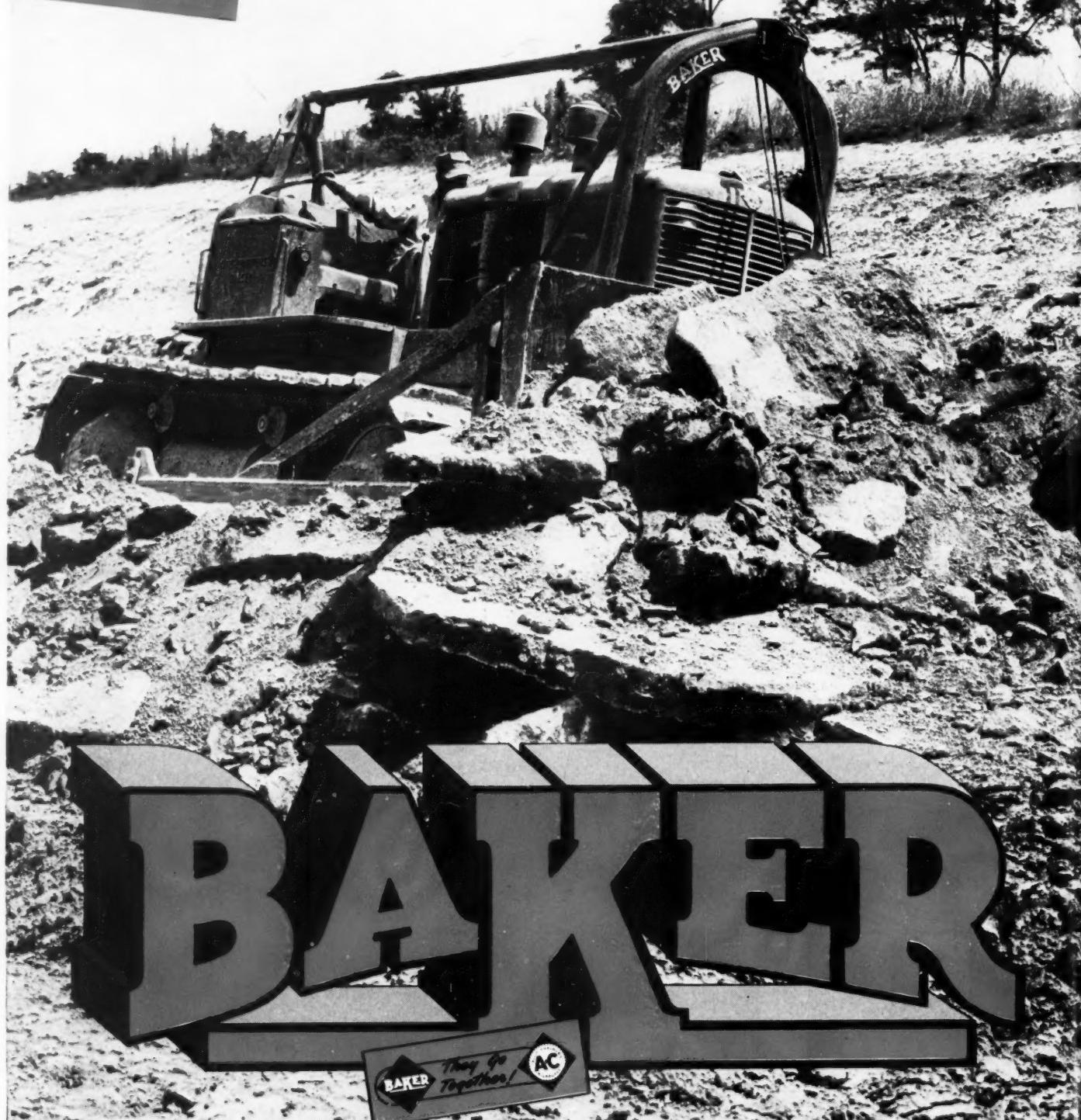


HD-19

*It's Rugged and Tough
— Built to Outproduce
and Outlast!*

THE GREATEST TEAM ON

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BAKER Bulldozer and AC HD-19

NEW HYDRAULIC
BULLDOZER



The World's Largest Most Powerful Bulldozer

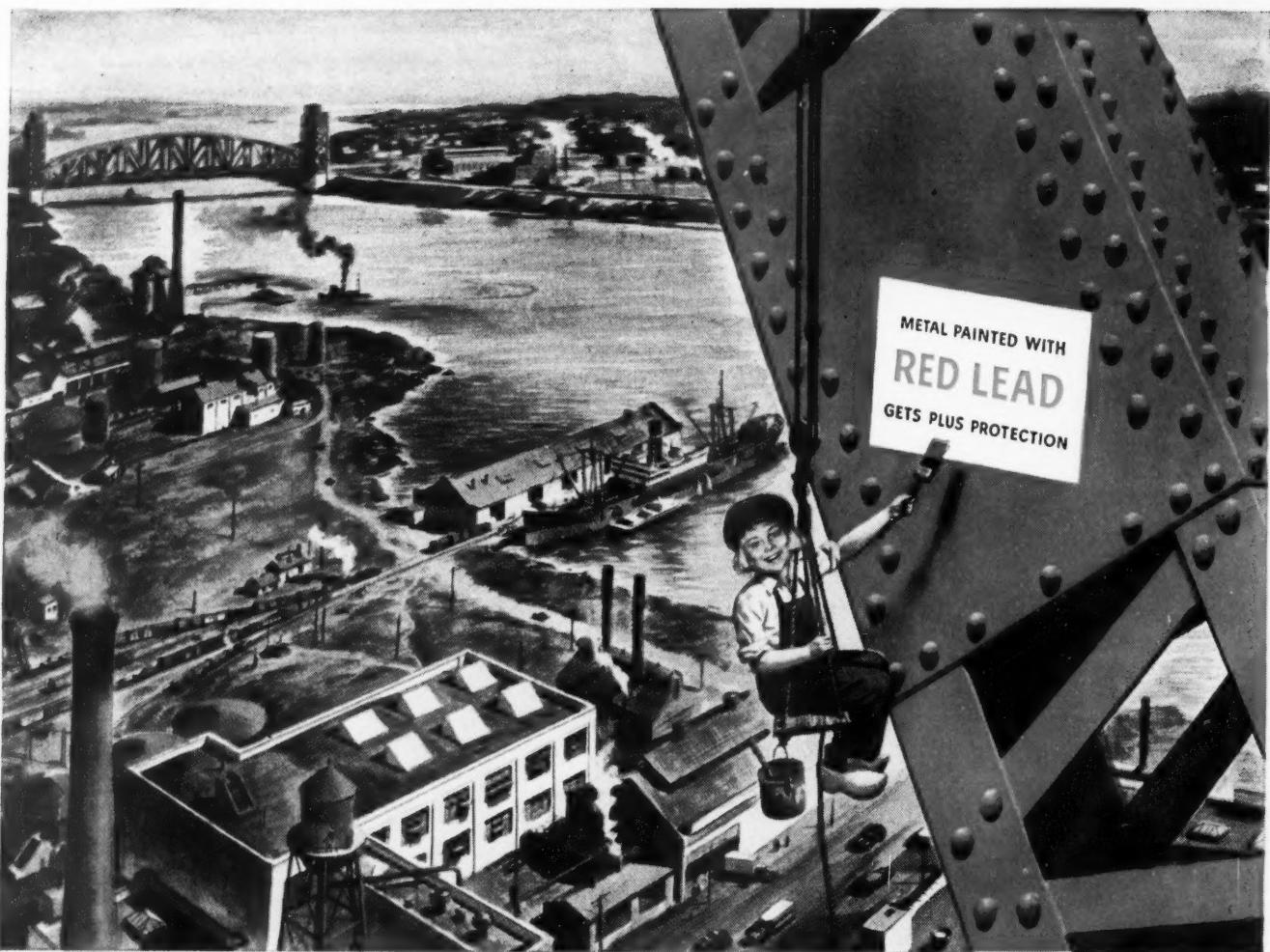
Here's a sensational combination — the largest tractor ever built engineered into Baker Bulldozers — to give you more traction, more power, more weight, more work capacity than ever before.

The HD-19 Baker Bulldozer with Torque Converter Drive provides unlimited operating speeds with a minimum of gear shifting — operating speeds that are automatically geared to load conditions for maximum efficiency. Over 48,000 pounds of weight provide "slip-proof" traction in all weather and ground conditions. Big 11'-1" x 4' mold-

boards roll mountains of earth and rock to pile up yardage in record breaking time.

Again Baker sets the pace with both cable and hydraulic Bulldozers and Grade-builders, each specifically engineered into the Allis-Chalmers HD-19. If it's low cost yardage — smashing power — continuous operation you're after, tackle your next job with an HD-19 and Baker 'Dozer — it's the greatest team on earth.

BAKER MFG. CO. • Springfield, Ill.



Unique RED LEAD "Soaps"

... check Rusting 3 Ways

Scientific research shows why Red Lead has long been regarded as the "standard" metal-protective paint.

One interesting factor is Red Lead's ability to react with the vehicle and produce unique lead "soaps."

These "soap" formations grow to form a tough, impervious, intermeshing matrix within the paint film, as shown in the photomicrographs below. These "soaps" help Red Lead inhibit rust three ways.

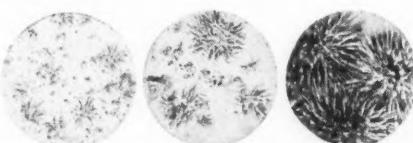
1. Toughen Paint Film. Radiating from central cores the "soap" formations develop long, rod-like projections, which spread out and interlock. Thus, they form a dense intermeshing structure that *mechanically* reinforces and toughens the paint film.

2. Make Film Water-Resistant. The very structural formation of these "soaps," with their thick, impervious matrix of closely-knit fibres, helps restrict the passage of moisture through the paint film. And metal cannot rust without the presence of moisture.

3. Keep Film Flexible. The "soap" formations, far from being rigid, allow movement all

along their soft, intertwining projections. The resulting flexibility helps prevent the ruptures to which a hard, unyielding paint film is subject. Thus the lead "soaps" aid in maintaining the continuity of the paint film.

Lead "soaps" form primarily in the dry paint film as it ages. This is where the "soap" formations impart their greatest benefits. When a paint film weathers and ages, decomposition products of the vehicle are formed. Red Lead's ability to slowly combine with these decomposition products actually enhances the life of the paint film. Red Lead's slow rate of reaction means the film age-hardens at a slower rate. It thus retains a high degree of flexibility, a great factor in its lasting adhesion.



The photomicrographs above show how Red Lead "soaps" progressively spread out as they grow and thus reinforce the paint film.

Remember, too, Red Lead is compatible with practically all vehicles commonly used in metal protective paints, including fast-drying resin types.

Specify RED LEAD for ALL Metal Protective Paints

The rust-resistant properties of Red Lead are so pronounced that it improves *any* metal protective paint. So, no matter what price you pay, you'll get a better paint if it contains Red Lead.

* * *

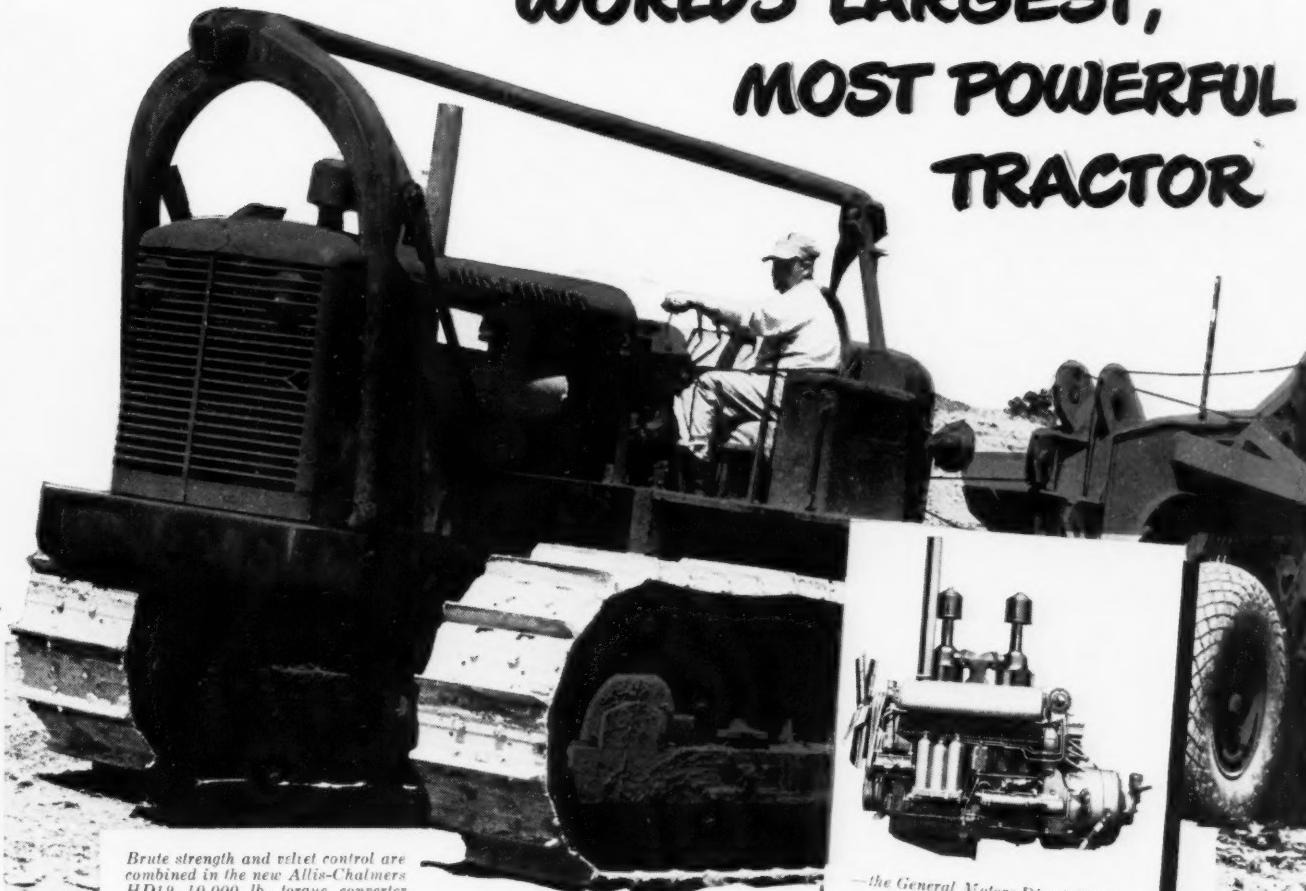
The benefit of our extensive experience with metal protective paints for both underwater and atmospheric use is available through our technical staff.

NATIONAL LEAD COMPANY: New York 6; Buffalo 3; Chicago 8; Cincinnati 3; Cleveland 13; St. Louis 1; San Francisco 10; Boston 6, (National Lead Co. of Mass.); Philadelphia 7, (John T. Lewis & Bros. Co.); Pittsburgh 30, (National Lead Co. of Pa.); Charleston 25, W. Va., (Evans Lead Division).



DUTCH BOY
REG. U. S. PAT. OFF.
RED LEAD

CHOSEN TO POWER THE WORLD'S LARGEST, MOST POWERFUL TRACTOR



Brute strength and velvet control are combined in the new Allis-Chalmers HD19 40,000 lb. torque converter tractor, powered by a 6-cylinder General Motors 2-cycle Diesel engine.

—the General Motors Diesel Engine

The new Allis-Chalmers HD19 tractor with hydraulic torque converter is powered by a General Motors Series 71 2-cycle Diesel engine.

To quote Allis-Chalmers, this new, mighty tractor was "built to get more work done—built to last longer with less upkeep." The GM Diesel with its wealth of smooth dependable power will do its full share in making good on both points.

Allis-Chalmers' selection of the GM Series 71 engine for the world's largest, most powerful tractor is in line with the thinking of more and more builders of shovels, cranes, soil stabilizers, pumps, air compressors, ditchers, dirt wagons and other heavy road-building and contractors' machinery.

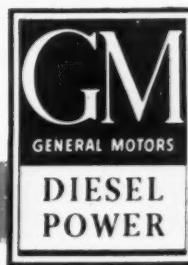
The GM Diesel engine is the logical choice where quality of manufacture and PERFORMANCE count.

DETROIT DIESEL ENGINE DIVISION

DETROIT 28, MICH. • { SINGLE ENGINES ... Up to 200 H.P.
MULTIPLE UNITS ... Up to 800 H.P.

GENERAL MOTORS

DIESEL BRAWN WITHOUT THE BULK



Here's a new machine and that will **MAKE MONEY**



Digs ... hauls ... spreads

Rig is self-loading . . . picks up 3.3 yards at a clip . . . hauls at high speed . . . spreads in smooth easily-compacted layers . . . ideal for working roadside gravel pits.



One-man operated

One man handles entire operation . . . load, haul, spread . . . no other labor or equipment needed. Easy to learn . . . easy to operate . . . easy to keep in good working condition.



Fast job-to-job moves

Travels over pavement or cross country at speeds up to 23 m.p.h. No waiting for trailer. Just hop on and go . . . move your dirt . . . move on to next job.



**See your LeTOURNEAU Distributor now for
complete facts on this ONE-MAN DIRTMOVER**

a new business **FOR YOU!**

HERE'S your chance to build a profitable "one-man business" — simply by cashing in on the ready-made demand for small contract dirtmoving.

A new type of business

You'll also be getting in on the "ground floor" because, until recently, there has never been an economical way to handle small, scattered dirtmoving jobs. Today, however, with the new high-speed "D" Tournapull, a self-powered, rubber-tired Scraper, one man can handle a number of small jobs per week . . . collect a good price for each job . . . develop an attractive business or side-line with a really promising future. Best of all, this versatile new tool eliminates the need for power shovel, trucks, flatbed trailer, drivers and operator formerly necessary to mechanize small dirtmoving operations.

\$12,000 gets you started

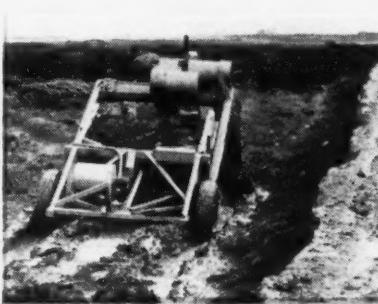
You can get a new 3-yard "D" Tournapull delivered to your door for less than \$12,000 complete. Less than \$25 per day pays your operating cost for this one-man dirtmover, leaving you plenty of room for profit.

Be first in your locality to offer this profitable new service. See your LeTourneau Distributor today for a FREE DEMONSTRATION.



Handles multiple jobs

High speed lets you handle a number of small jobs per week. Your only competition is a pick and shovel gang or power shovel with a couple of trucks.



All-weather tool

Goes anywhere, anytime. Not afraid of mud, snow or ice. Positive power steer, plus revolutionary new type differential take it through where trucks would stall.

Tournapull—Trademark Reg. U.S. Pat. Off. C75

Check these OPPORTUNITIES for small **CONTRACT DIRTMOVING**

Farms and Estates

\$ Digging stock ponds and irrigation ditches . . . terracing hilly land for cultivation . . . leveling feed lots . . . building soil saving dams . . . spreading top soil . . . graveling access roads.

Counties

\$ Cleaning drainage ditches . . . dressing shoulders and berms . . . building fire lanes and short feeder roads . . . graveling secondary roads.

Cities and Towns

\$ Grading streets for new subdivisions . . . landscaping around parks, golf courses and cemeteries . . . grading airport runways . . . covering garbage dumps . . . snow removal.

Builders

\$ Leveling and filling lots . . . digging group basements . . . grading and graveling driveways . . . spreading top soil . . . developing subdivisions.

Industries

\$ Stockpiling coal and bulk materials . . . grading for short spur tracks, leveling building sites . . . disposing of slag, cinders, other waste.

Mines and Quarries

\$ Stripping overburden . . . graveling haul roads . . . delivering or reselling gravel, crushed stone or aggregate loaded from stockpiles.

Railroads

\$ Grading right-of-way . . . cutting down banks . . . "day-lighting" curves . . . spreading ballast . . . grading for industrial sidings.

Mining Black Dirt

\$ Ideal for fill-in work. Can mine at convenient locations to service city and farm buyers.

LETOURNEAU  **TOURNAPULLS**

HANDLING 37½ TON GIRDER



with 2 BAY CITY

CRANE MOBILE



at OPERATION CROSSROADS



Hoisting into place

Objective: to hoist 2 girders—each 113 ft. long and weighing 37½ tons—into position on concrete piers to conduct Edge Hill Rd. across "Old York Road" (U. S. Route 611) in Abington Twp., Bucks County, Pennsylvania.

Here's how the operation was completed—in just 30 minutes! Two Bay City CraneMobiles with 40 ft. booms, owned and operated by Bucks County Construction Co. of South Langhorne, Pa., teamed up on each girder, hoisting it from trailer to pier. The result: *a big job completed in minimum time, with minimum effort*, and minimum disruption of main highway traffic. For complete facts on simplifying and speeding your material handling with Bay City Cranes and CraneMobiles, see your nearest dealer or write direct.



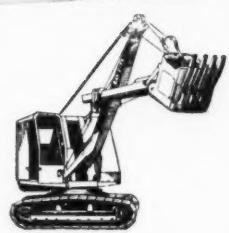
Setting girder
into position.

BAY CITY

SHOVELS • CRANES • HOES
DRAGLINES • CLAM SHELLS

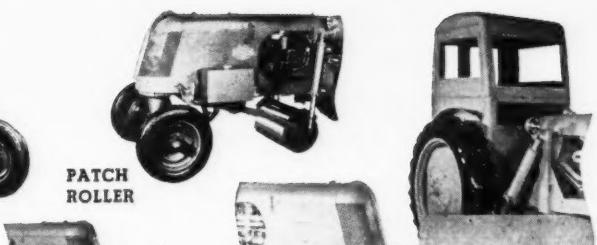
SEE YOUR NEAREST DEALER for Bay City excavating and material handling equipment in sizes from $\frac{3}{8}$ to $1\frac{1}{4}$ yards having crane rating up to 20 tons. Both crawler and pneumatic tire mounting.

BAY CITY SHOVELS, INC., Bay City, Michigan





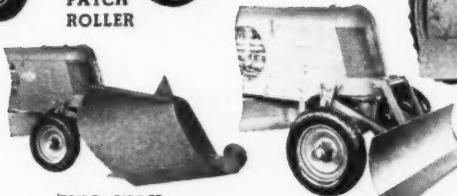
THE HUBER
ROAD MAINTAINER



PATCH
ROLLER



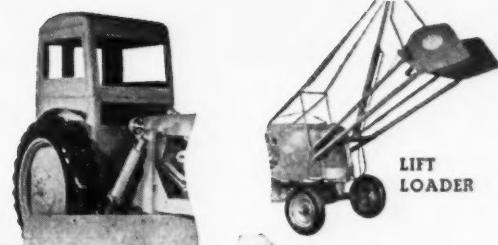
ONE WAY SNOWPLOW



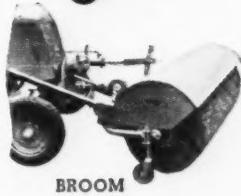
TWO WAY
SNOWPLOW



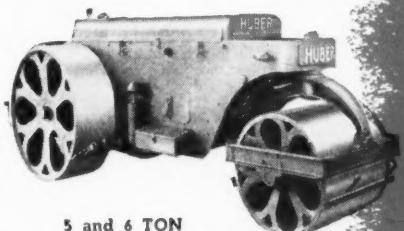
CAB



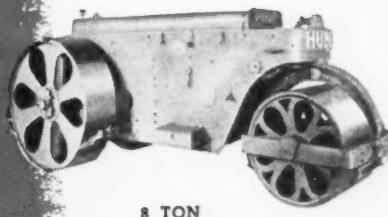
LIFT
LOADER



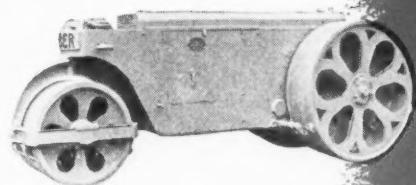
BROOM



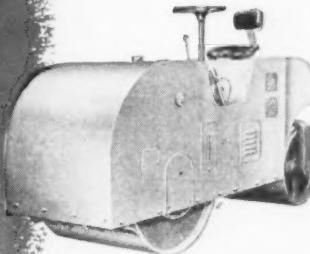
5 and 6 TON
3-WHEEL ROLLER



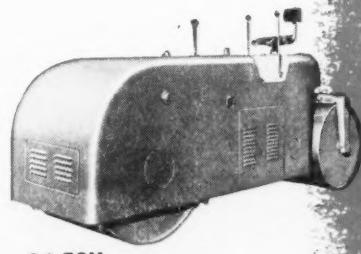
8 TON
3-WHEEL ROLLER



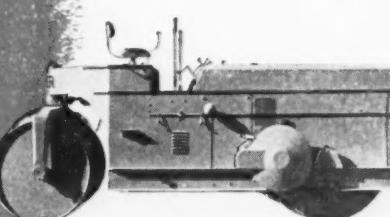
10-12 TON
3-WHEEL ROLLER



3-4 TON
TANDEM ROLLER



5-8 TON
TANDEM ROLLER



8-12 TON
TANDEM ROLLER

HUBER OFFERS A COMPLETE LINE OF PROVEN ROAD MACHINERY

To standardize on Huber Road Machinery is to place your road, street, highway and airport construction and maintenance requirements in the hands of a capable organization of long experience and thoroughly acquainted with your problems.

THE HUBER ROAD MAINTAINER is a versatile, dependable, economical machine that through its auxiliary units makes it a "One Man Maintenance Crew" for all types of year 'round maintenance work.

HUBER 3-WHEEL ROLLERS

Built in sizes from 5 to 12 tons - powered with either heavy duty 6 cylinder gasoline or Diesel engines. Dependable - economical - powerful.

HUBER VARIABLE WEIGHT TANDEM ROLLERS

3 to 12 Ton capacities - modern design - streamlined, sturdy construction - three speeds forward and reverse - dual control - and many other desirable Huber features. (Also a 3-4 Ton Trailer).

THE MFG. COMPANY • MARION, OHIO, U. S. A.

HUBER

3 Wheel • Tandem
ROAD ROLLERS
and
MAINTAINERS

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DUNHAM-PUGH CO., INC.MAINE
Portland—EASTERN TRACTOR & EQUIP. CO.

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INGERSOLL, INC.

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EQUIPMENT CO.

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Union—SMITH TRACTOR & EQUIP. CO.NEW MEXICO
Albuquerque—HARRY CORNELIUS CO.NEW YORK
Albany—SLADE TRACTOR & EQUIPMENT CO.

Buffalo—FOX EQUIPMENT CO.

New York—H. O. PENN MACHINERY CO.

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Utica—CREDEL EQUIPMENT CO.

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Columbus—BLAKE EQUIPMENT CO.

Marietta—NORTHWEST SUPPLY &

EQUIP. CO.

Toledo—EDMUND SUPPLY CO.

OKLAHOMA
Oklahoma City—THE BOARDMAN CO.OREGON
Portland—COLUMBIA EQUIPMENT CO.PENNSYLVANIA
Cherries—CLEARFIELD EQUIPMENT CO.

Philadelphia—METALWELD, INC.

Pittsburgh—BRINKER SUPPLY CO.

Wilkes-Barre—STANDARD EQUIPMENT CO.

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Columbia—TIDEWATER SUPPLY CO., INC.TENNESSEE
Knoxville and Nashville—DEMPSTER BROS.

Memphis—HOWELL EQUIPMENT CO.

TEXAS
Dallas—HI-WAY MACHINERY COMPANY

El Paso—DON A. CARPENTER CO.

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Lubbock—FRED BERRYHILL EQUIP. CO.

San Antonio—TOWERY EQUIPMENT CO.

UTAH
Salt Lake City—THE LANG CO., INC.VERMONT
Winooski Junction—NOBLE-BEILISLE

MACHINERY CO.

VIRGINIA
Norfolk and Roanoke—TIDEWATER

SUPPLY CO.

Richmond—INDUSTRIAL SUPPLY CO.

WASHINGTON
Seattle and Spokane—COLUMBIA EQUIP. CO.WEST VIRGINIA
Charleston—CLYDE W. BECKNER, INC.WISCONSIN
Milwaukee—STONE MANUFACTURING CO.

Park Falls—STEIGER MOTOR SALES

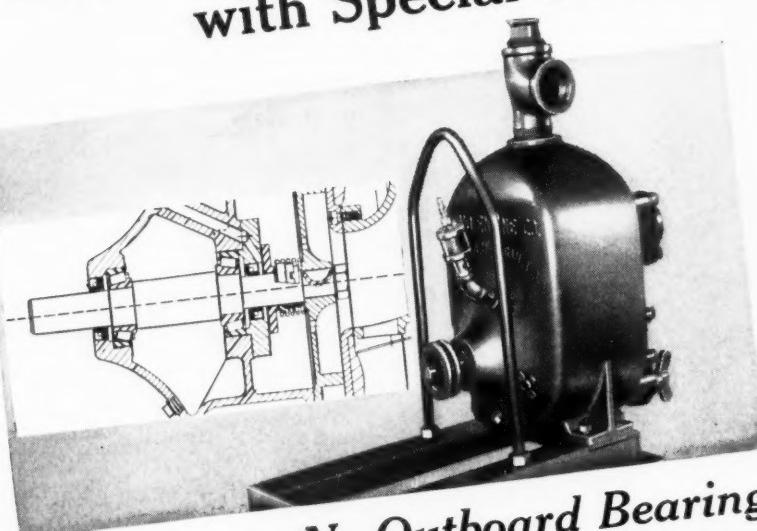
ALASKA
Anchorage—NORTHERN ENGINEERING &

EQUIPMENT CO.

NOVO NEWS

OCTOBER, 1947

**"Jerry-Rigging" Not
Needed on Novo Pumps
with Special Drives**



**No Bracket, No Outboard Bearing
No Separate Lubrication Required**

Novo "Pronto-Prime" self-priming centrifugal pumps are engineered specifically for use with belt, chain, or gear drives. Simply install a pulley or gear on the pump shaft and you're ready for work. This is possible because the "Pronto-Prime" impeller shaft is supported by two internal bearings lubricated from one oil reservoir. The construction makes it unnecessary to extend the pump shaft and use an adapter or bracket to house an outboard bearing, which must then be specially lubricated.

The Novo design is simpler, stronger, more durable, and less costly.

See your nearest Novo distributor for complete information on the "Pronto-Prime."

Other Novo Equipment

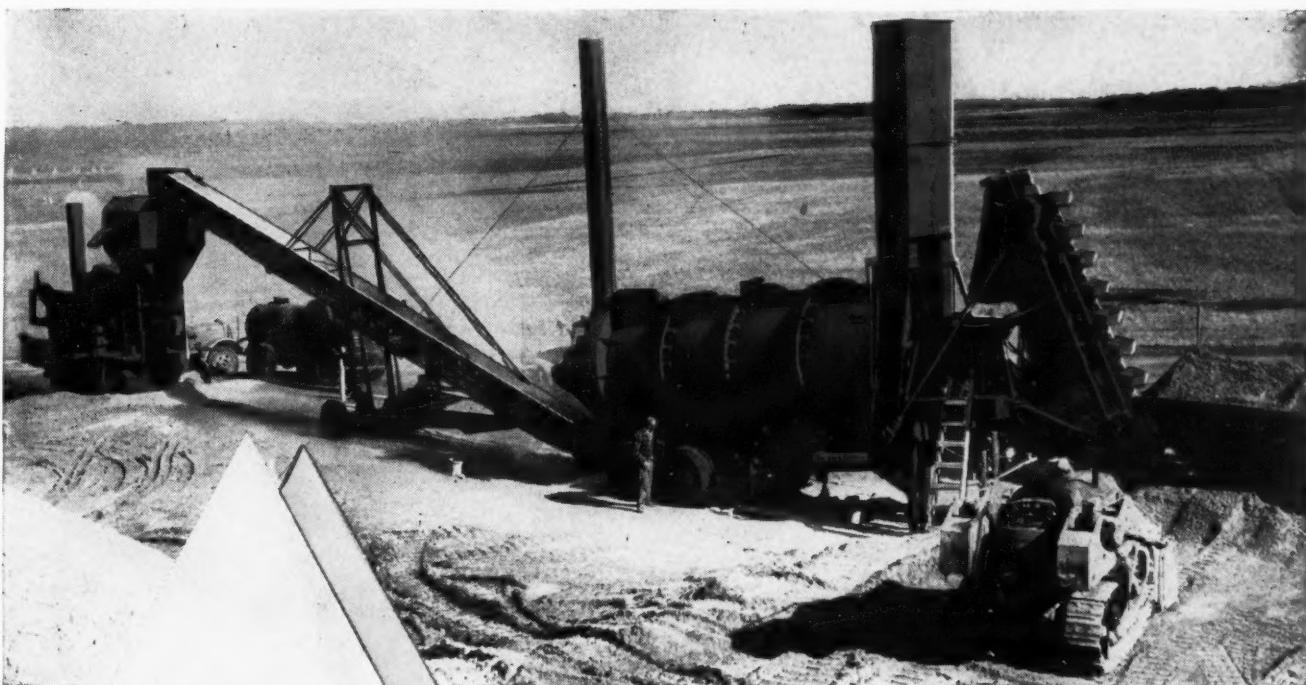
Novo contractors' equipment—backed by over 50 years of manufacturing experience—includes diaphragm pumps, pressure pumps, hoists, generator sets, air compressors, pavement breakers, engines, and the Scootruk—the new, amazing mechanized wheelbarrow.

NOVO
ENGINE COMPANY
LANING E. MICH. U.S.A.
CONTRACTOR'S EQUIPMENT
• GRAY IRON CASTINGS •
ENGINES

Allied Member of A.E.D.



Barber-Greene



The B-G Tamping-Leveling Finisher will lay any mix, hot or cold. Places a continuous ridge-free surface with each succeeding strip firmly compacted against the previous one.

High-Capacity "Intermediate" Mixing with Portability

Here's the B-G "Intermediate" Bituminous Mixing Plant that combines the convenience of true portability with the basic advantages of the B-G Bituminous Mixing System*. You can tow the units you need to the job, right to the spot that's most convenient and economical from the standpoint of aggregate source and need for finished mix.

In its accuracy the B-G "Intermediate" Plant bridges the gap between the B-G "High-type" and B-G Travel Plant. Capacity is from 80 to 120 tons per hour. It is used principally for single-aggregate mixes; however, an optional 2-compartment charging Bin, with B-G 2-gate Reciprocating Feeder, provides a method of feeding a fine and coarse aggregate where rigid aggregate gradation is not required. For details, write for literature, or see your B-G representative.

***THE B-G BITUMINOUS MIXING METHOD:** Continuous flow, with measured volumetric aggregate content, metered bitumen supply, controlled temperature, and thorough twin-pugmill mixing —through flexible, coordinated portable units. Barber-Greene Company, Aurora, Illinois.



16 FEET OF WATER—DISAPPEARED OVERNIGHT



CONTRACTOR: MILLS AND JONES, INC., ST. PETERSBURG, FLA.

"Bottom in perfect shape"
"Contractor making excellent progress"
"Everyone well pleased"

Skimming through our demonstrator's reports, we find these phrases occurring again and again as he describes activities on this \$300,000 foundation for the Maas Bros. Department Store building in St. Petersburg, Florida.

Material consisted of fine sand, silt, and hardpan. Careful planning, careful installation of a MORETRENCH WELLPOINT SYSTEM resulted in a dry hole in less than thirty-six hours.

PROGRESS ON A WET JOB BEGINS WITH MORETRENCH!

MORETRENCH CORPORATION

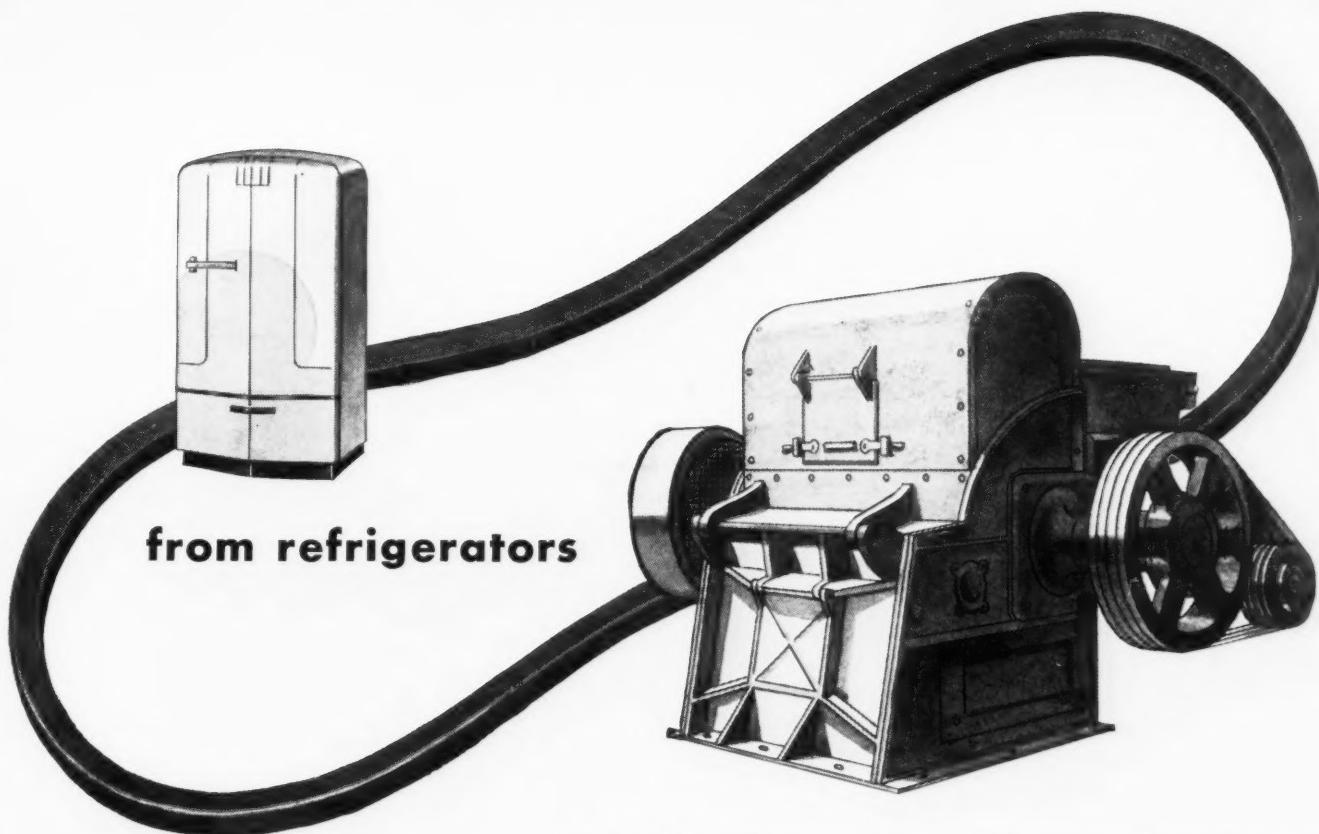
90 West St.
New York 6

3037 S. Christiana Ave.
Chicago 23, Illinois

7701 Interbay Blvd.
Tampa 6, Florida

315 W. 25th St.
Houston 8, Texas

Rockaway
New Jersey



from refrigerators

to the largest rock crushers . . .

Thermoid V-Belts are on the job

Power transmission engineers know the many advantages of V-Belt drives . . . compact, noiseless, positive, economical, etc. Experience has proven that additional advantages are derived—at no increase in cost—when Thermoid V-Belts are on the job.

Great strength, long life and uniformity are all built into Thermoid F.H.P. (Fractional Horsepower) and Multiple V-Belts, because every belt—from raw materials to finished product—is manufactured under the most exacting controls.

Your Thermoid Distributor Can Promptly Supply The Belts You Need

The Thermoid Line Includes: Industrial Brake Linings and Friction Products • Transmission Belting • F.H.P. and Multiple V-Belts • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Custom Molded Parts

A postcard or letter to the home office will bring his name and address to you.

Manufacturers of new equipment are invited to correspond direct with the home office.

Thermoid

Thermoid Company • Trenton, N. J., U.S.A.
Automotive • Industrial • Oil Field • Textile Products

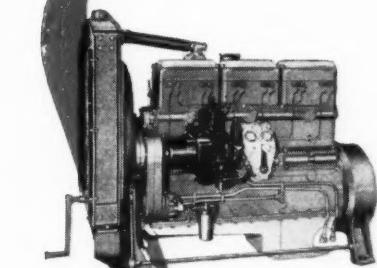
It's Good Business To Do Business With Thermoid



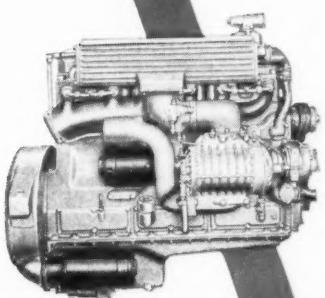
BASIS for your profits

The best diesel engine that modern research and manufacturing methods can produce . . . backed by an unmatched dealer network of power specialists who provide genuine parts, trained mechanics and technical assistance. These are two important reasons why your investment in Cummins Dependable Diesels will prove profitable.

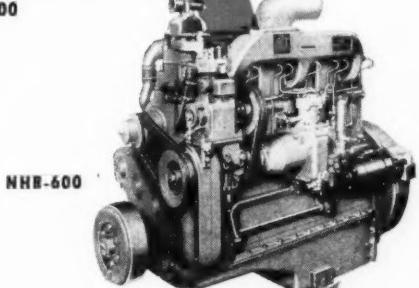
CUMMINS ENGINE COMPANY, INC. • COLUMBUS, INDIANA



HIP-600



HBS-600



NH-600

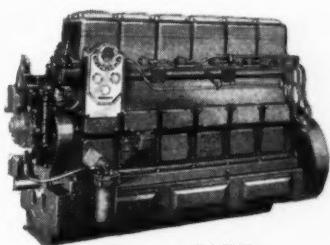
Built for the Premium Jobs

Cummins Dependable Diesels are designed and built for the "premium" jobs in the construction and aggregates industries . . . for installation in heavy-duty shovels, cranes, draglines, rock crushers, dredges, compressors, off-highway trucks and virtually every other kind of equipment in the 84 to 275 hp range. Economy of operation, dependability are characteristics of Cummins Engines that have been proved on hundreds of jobs like yours.

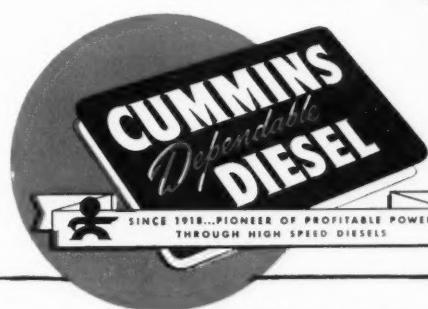
These "producers of low-cost power" are built by a company whose 29 years of manufacturing experience have been devoted exclusively to medium and high-speed diesel engines.

**CUMMINS ENGINE COMPANY, INC.
COLUMBUS, INDIANA**

NHIS-600



LI-600



SINCE 1918...PIONEER OF PROFITABLE POWER
THROUGH HIGH SPEED DIESELS

SPECIFICATIONS

Series	Bore and Stroke	Piston Disp. (Cu. In.)	Maximum Rating (H.P. and R.P.M.)	Net Weight* (Lbs.)	Dimensions*
H-600	4 1/8 x 6	672	150 @ 1800	2160	57 x 30 x 46
HS-600	4 1/8 x 6	672	200 @ 1800	2540	58 x 32 x 47
NH-600	5 1/8 x 6	743	200 @ 2100	2600	59 x 41 x 63
NHS-600	5 1/8 x 6	743	275 @ 2100	3000	59 x 41 x 61
L-600	7 x 10	2309	250 @ 1000	7590	92 x 44 x 58

*Approximate for basic engine. Does not include accessories.

**Another
FIRST!
by SOUTHWEST**



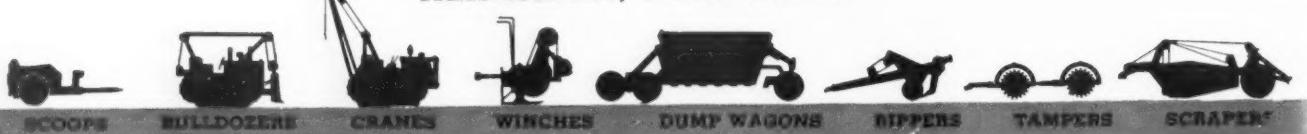
THIRTY NEW SOUTHWEST BOTTOM DUMP WAGONS are doing a big job for Macco Corporation and Morrison-Knudsen Co. at Mills Field, California. Each unit averages 70 YARDS PER HOUR, BANK MEASURE, ON A SIX TO EIGHT MILE ROUND TRIP HAUL. That's how to move "muck" and cut costs in a big way!

Southwest Wagons are engineered to fit YOUR tractor and suit YOUR needs. 30-CU. YD. water level—38-CU. YD. heaped capacity—Special heavy duty construction—Easy operating, air controlled bottom dump doors—Heavy duty bogie wheels—Air operated brakes. • Write for Bulletins on complete line of Southwest Construction Equipment.

CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Co.

ALHAMBRA, CALIFORNIA



CONFIDENCE... how much is it worth?



IT WAS NINE YEARS before the first gasoline-driven automobile in the United States was operated by C. E. Duryea that the Brooklyn Bridge was opened in 1883. This fabulous engineering achievement was the culmination of over 26 years of planning and building, of bold vision and heart-breaking struggle, by John A. Roebling and his son Washington.

But the steadfast confidence of father and son in the success of their amazing venture is vindicated daily by the modern traffic this world-famous bridge continues to carry now . . . 64 years later.

How much is that confidence worth to you today . . . and to the John A. Roebling's Sons Company, now embarked on a multi-million dollar expansion program to meet the future's challenge?

Confidence is the driving power behind our efforts to make better products do better work for you.

You Can't Go Wrong — If You Use the Right "Blue Center" Rope

There's no better way to save wire rope dollars than to use the right rope for your job. That means the right grade of steel, the correct construction, the proper size. And your choice is easy when you specify Roebling "Blue Center" Steel Wire Rope.

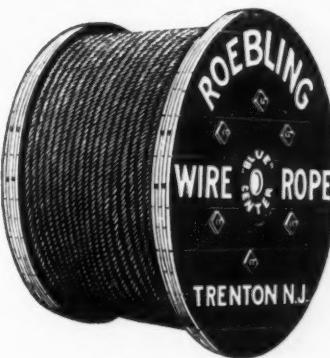
In "Blue Center" you get what we feel sure is the finest rope steel made. Secondly, you have

a wide range of constructions and sizes to choose from . . . in both preformed and non-preformed types.

Why not make the Roebling Field Engineer your right-hand man in selecting wire rope that will give you peak performance at the lowest overall cost? You can call or write him at our nearest branch office.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON 2, NEW JERSEY
Branches and Warehouses in Principal Cities

Manufacturers of Wire Rope and Strand • Fittings • Slings • Screen, Hardware and Industrial Wire Cloth • Aerial Wire Rope Systems • Hard, Annealed or Tempered High and Low Carbon Fine and Specialty Wire, Flat Wire, Cold Rolled Strip and Cold Rolled Spring Steel • Ski Lifts • Electrical Wire and Cable • Suspension Bridges and Cables • Aircord, Aircord Terminals and Air Controls • Lawn Mowers



The **RIGHT** steel . . .

The **RIGHT** construction . . .

The **RIGHT** size . . .

—FOR YOUR JOB!

ROEBLING

A CENTURY OF CONFIDENCE 

T here's still one building cost that can be cut in half!

In poured concrete construction, Form Costs
usually account for 60% of the total cost!

ATLAS SPEED FORMS *Reduce form costs 50% or more.**

Here's how Atlas steel forms reduce poured concrete costs.

THEY CUT: Actual form costs
Form labor costs
Assembly and stripping time

Atlas speed forms are doing this every day — they can do it for you. Well designed, sturdily built of steel, engineered for poured concrete work, the Atlas steel form is easy to erect, simple to strip. No specialized labor is necessary.

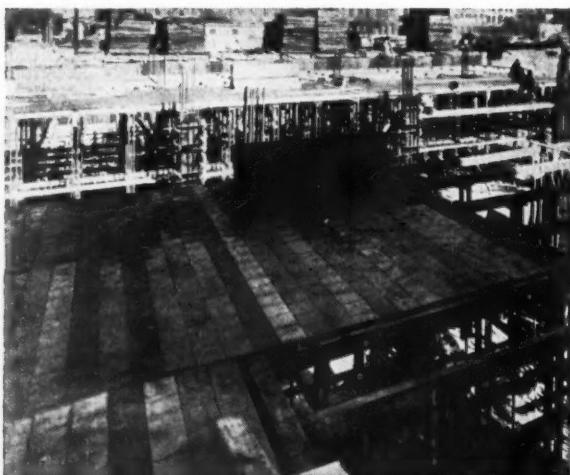
WE OFFER A FORM ENGINEERING SERVICE

We make an excellent form... but we do more. We specialize in form work problems. In the last few years our staff has studied and solved almost every type of form work problem. We are not theorists. Our organization consists of successful contractors and engineers, plus a group of our steel fabricating experts backed by our own large modern plant.

From operations in our factory to work on your site, we suggest the most efficient and economical way of completing your form work.

FORM COSTS CAN WIN OR LOSE THE BID!

Atlas Speed Slab Forms used by
Hillsmith Co., contractor, on Sears
Roebuck Buildings, Dayton, Ohio.



IRVINGTON FORM & TANK CORPORATION

Irvington, New York

Address inquiries to New York Office
43 Cedar Street, New York 5, N. Y.

Telephone BO 9-4030

LOCAL REPRESENTATIVES

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Irvington Form & Tank Corporation
294 Washington Street

DENVER 2, COLORADO
K-C Construction Supply Co. Inc.
1800 West Colfax Avenue

MIAMI, FLORIDA
Nicholas Nordone
93 N. E. 20th Street

NASHVILLE, TENN.
S. C. Ewing Company
Nashville, Tennessee

SAN FRANCISCO 7, CALIF.
Universal Pacific Company
Sixth & Hooper Streets

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Broad St. Station Bldg.

TACOMA 6, WASH.
A. H. Geiger
2412 N. 10th Street

WASHINGTON, D. C.
Irvington Form & Tank Corp.
805 G Street, N. W.

*Of course, in certain complicated layouts, or if you already use Atlas Forms, this may not hold—but on the average, it's a fair statement.

Let's give you a study of the cost

of form labor and forms on the project you're now working on. If you're pouring concrete, you'll make a considerable saving if you can use Atlas Speed Forms. Fill in this data sheet or dictate it to your secretary. There's no obligation, no red tape.

DATA SHEET

PROJECT _____ DATE _____
LOCATION _____ Type of Building or Structure _____
CONTRACTOR _____
ADDRESS _____

1. POURING SCHEDULE

- a. When will forms be needed?
- b. How soon can you strip?
- c. Square feet of forms required
- d. Total square feet of form work to do in job

2. WALLS

- a. Height and length of walls
- b. Pilasters, size
- c. Thickness of wall

3. SLABS

- a. Will you frame more than one floor?
- b. Spans
- c. Thickness of slab
- d. Area of each floor
- e. Number of floors
- f. Number of reuses
- g. Type of construction
- h. Flat slab between steel or concrete beams
- i. Mushroom slab system

FORMS FOR
Walls, Floors,
Dams, Tunnels,
Sewers,
Bridges

So light
a child
can lift it!



CM-10-47

IRVINGTON FORM & TANK CORP.

NEW YORK OFFICE: 43 CEDAR STREET, NEW YORK 5, N.Y.

THERE'S PROFIT-PACKED POWER IN EACH BITE



Every time a WJ55 Blue Brute Hand-Held Rock Drill bites into rock . . . it makes a big dent in operating costs, too.

That's because Blue Brute Rock Drills give close bidders the kind of performance that means quicker, cleaner, deeper drilling for longer periods with less punishment to the runner.

And this 55-pound rock eater needs no babying because it's tough-muscled at such key places as — its positive-acting, end-seating valve, its rugged chuck housing and its smooth-operat-

ing rifle-bar construction.

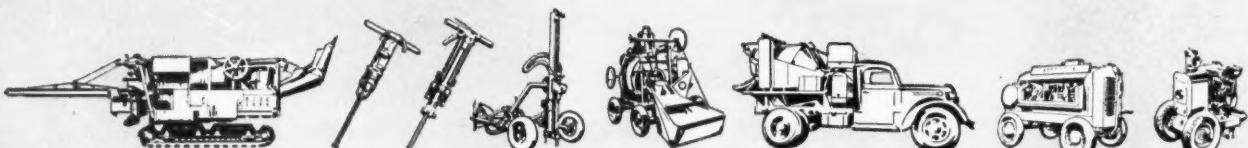
Furthermore, this top-notch performance is doubly sure when you team up WJ55's with a Worthington Blue Brute Compressor. This portable power-house gets its punch from light, tight, efficient Feather* Valves, rigid alignment through 3-point engine and compressor suspension, full force-feed lubrication and other features. Comes with Diesel or gasoline drive.

Write today for more detailed information on why *there's more worth in a Blue Brute*.

*Reg. U.S. Pat. Off.

H7-9

Buy BLUE BRUTES



IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

KNOW YOUR **BLUE BRUTES**

Your Blue Brute Distributor will be glad to show you how Worthington-Ransome construction equipment will put your jobs on a profitable basis. His name is listed on Page 142.

RANSOME EQUIPMENT

Pavers, Portable and Stationary Mixers, Truck Mixers, Pneumatic Placing and Grouting Equipment and Accessories.

WORTHINGTON EQUIPMENT

Gasoline and Diesel Driven Portable Compressors, Rock Drills, Air Tools, Self-Priming Centrifugal Pumps and Accessories.

WORTHINGTON



Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division, Holyoke, Mass.

HOW INTERNATIONAL Specializes Your Trucks to Loads and Roads



This first step is an analysis of your hauling problem by your International Dealer or Branch.

This analysis includes type of load; method of loading; terrain and grades; and length of hauls.

The amount of payload practicable for your trucks then is determined by the exclusive International Truck Point Rating System.

Your Internationals then are *specialized*—engine power, transmissions, axle ratios and other units and attachments—to fit your trucks to your jobs.

What does this *specialization* add up to?

1. Ability to do *your* hauling jobs right. 2. De-

pendability. 3. Economical operation. 4. Low maintenance. 5. Long truck life.

The International Truck Line is the most complete line built. It includes 22 basic models that specialize into more than 1,000 different types of trucks. Gross weight ratings are from 4,400 to 90,000 pounds.

For details of International Truck *specialization*, and analysis of your jobs by the International Point Rating System, consult your International Dealer or Branch.

Motor Truck Division

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue



Tune in James Melton on "Harvest of Stars" Sunday! NBC Network.

40TH ANNIVERSARY OF INTERNATIONAL TRUCKS
1907-1947—Forty years of International Truck Service to Industry, Commerce, Agriculture



INTERNATIONAL Trucks

PERFORMANCE!

Tells more than Words



"HANDY" PUMP



For size of pump, for power consumed, for dollar invested, Gorman-Rupp pumps will out-perform any other pump. This is a "put up or shut up" proposition for we are willing to let you prove this for yourself by a free trial with no strings attached.

There is a Gorman-Rupp pump to fit any job. If you want a handy all purpose pump as easy to carry as a bag of tools, the tiny "Handy" pump will fill the bill -- weighs only 20 pounds. Fitted with pipe or common garden hose this pump will lift up to 25 ft. Delivers 8 GPM at 40 lbs. pressure and more at lower pressures depending on water lift. Electric motor driven. Completely self-priming.

For a heavy dewatering job that calls for as much as 125,000 GPH, use a husky Gorman-Rupp heavy duty model pump.

Gorman-Rupp self-priming centrifugal pumps never have to be shut down to be cleaned out -- no recirculation orifice to get plugged -- no control valve to get jammed.

Ask what you want of a sturdy Gorman-Rupp pump -- give it any kind of a test. Actual performance on the job will convince you.

For details call your nearest distributor.

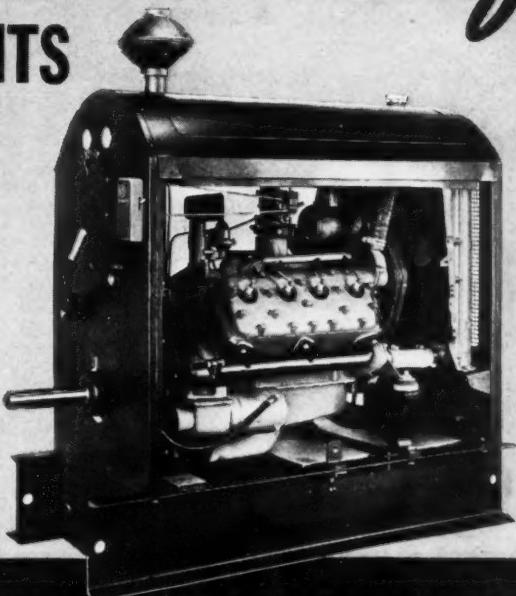


GORMAN-RUPP COMPANY
308 N. BOWMAN STREET • MANSFIELD, OHIO

Cut POWER COSTS in Half! with KRW INDUSTRIAL POWER UNITS

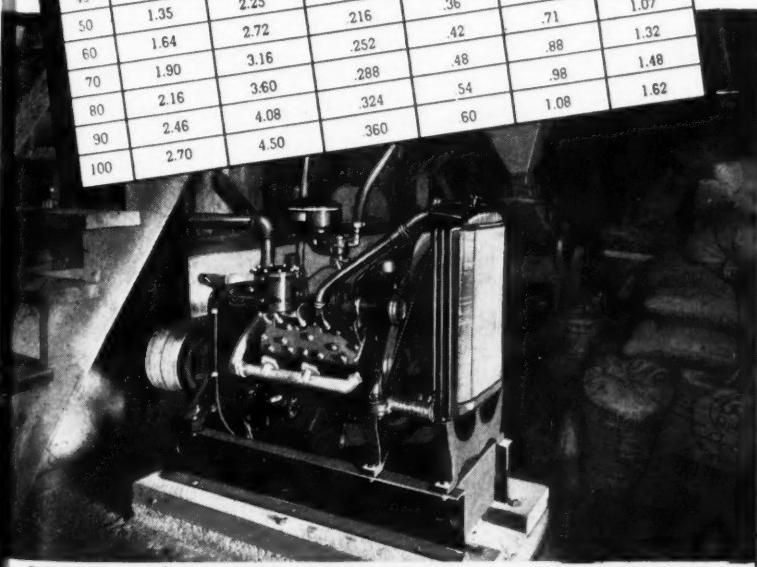
● Users everywhere . . . all kinds of power users . . . say without hesitation: "It's the finest and most dependable power plant ever built. It has cut our power costs in half." One reason owners are so enthusiastic is the fact that the heart of every KRW Industrial Power Unit is the great Ford 100 H. P. V-8 Truck Engine . . . blood brother to millions more in service around the world. Thus, every KRW user has available efficient, low-cost Ford Service as well as the Ford Engine and Parts Exchange Plan.

Combined with the V-8 power plant is the KRW 30-year tradition of quality manufacture; of close technical association with Ford, and Ford Dealers everywhere. KRW Conversion Parts are built right, of the right materials by modern precision methods. KRW Power Units operate on either gasoline, natural gas or any "bottled gas." KRW Industrial Power Units have been giving continuous, satisfactory, low-cost service for many years. See your Ford Dealer or mail the coupon.



**DRIVEN BY FAMOUS FORD V-8—100 H.P.
TRUCK ENGINE—OPERATES ON GASOLINE,
NATURAL GAS OR BUTANE . . . EFFECTS
TREMENDOUS SAVINGS . . . EVERY FORD
DEALER CAN SUPPLY SERVICE AND PARTS.**

Brake Horsepower	OPERATING COSTS PER HOUR					
	ELECTRIC MOTOR 80% EFFICIENCY Cost Per Kilowatt		KRW INDUSTRIAL UNIT OPERATING ON NATURAL GAS Cost Per 1000 Cu Ft 1125 B.T.U.		KRW INDUSTRIAL UNIT OPERATING ON GASOLINE Cost Per Gallon (Tax Free)	
	\$.03	\$.05	\$.30	\$.50	\$.10	\$.15
15	.41	.68	.054	.09	.19	.29
20	.54	.90	.072	.12	.25	.38
25	.68	1.13	.09	.15	.30	.45
30	.82	1.36	.108	.18	.34	.51
35	.95	1.58	.126	.21	.44	.66
40	1.08	1.80	.144	.24	.49	.74
45	1.23	2.04	.162	.27	.54	.81
50	1.35	2.25	.18	.30	.63	.95
60	1.64	2.72	.216	.36	.71	1.07
70	1.90	3.16	.252	.42	.88	1.32
80	2.16	3.60	.288	.48	.98	1.48
90	2.46	4.08	.324	.54	1.08	1.62
100	2.70	4.50	.360	.60	1.18	1.76



KRW Power keeps this feed mill humming.

See your Ford Dealer or Write...

K·R·WILSON

215 MAIN ST. • BUFFALO 3, N.Y.

STUDY THIS CHART IN TERMS OF YOUR INDIVIDUAL NEEDS

The table above shows the comparison of operating costs per hour for (1) Electric Motor, (2) KRW Unit operating on natural gas and (3) KRW Unit operating on gasoline. For dependable, constant-duty power, we recommend an engine speed not to exceed 2250 RPM and that only two thirds of the B. H. P. developed at any given speed should be used. Thus at 2250 RPM the engine develops a maximum of 64 B. H. P. on Gasoline and 55 B. H. P. on Natural Gas. This is usable Horsepower, available for short periods only. Two thirds of this or the constant duty power would be 43 B. H. P. and 36 B. H. P. with Gasoline and Natural Gas respectively. By using only two thirds of the maximum available Horsepower, reserve power is maintained for variations in fuel, lubricating oils, adjustments, ignition and climatic conditions. (There is a 3 to 5 per cent power loss for each 1000 feet of altitude.)

For highest efficiency, long engine life and economy, an engine speed of 1800 RPM has proven most satisfactory. Ford V-8 Engines are so highly developed and perfectly balanced, that an operating speed of 1800 RPM is recommended regardless of the Horsepower to be used.

K. R. Wilson, 215 Main St., Buffalo 3, N.Y. 25

Please send me information and prices on
KRW INDUSTRIAL POWER UNITS for

Generating Electricity Power Take-off
Equipped for gasoline Natural gas Butane

Firm _____

Address _____

City and Zone _____ State _____

what

means to gold . . .



means to mixers!

● On gold jewelry, the mark "14K" establishes the buyer's confidence in the product . . . guarantees its gold content. That confidence is equally generated by the AGC rating plates on mixers and pavers.

AGC rating plates are the buyer's assurance of guaranteed capacity and performance. They eliminate the guesswork on estimates. Guaranteed capacity means that you can accurately estimate right down to the last yard . . . a mighty important factor on those "close ones" to come.

Don't guess! Be sure by standardizing on equipment wearing the AGC rating plates.



MIXER MANUFACTURERS BUREAU

Affiliated with the Associated General Contractors of America, Inc.

Member Names

Chain Belt Company
Milwaukee, Wis.

Construction Machinery Co.
Waterloo, Iowa

Koehring Company
Milwaukee, Wis.

Ransome Machinery Co.
Dunellen, N. J.

Kwik-Mix Company
Port Washington, Wis.

The Foote Co., Inc.
Nunda, N. Y.

The Jaeger Machine Co.
Columbus, Ohio

The T. L. Smith Company
Milwaukee, Wis.

The Knickerbocker Co.
Jackson, Mich.

USERS REPORT ON THE "CATERPILLAR" BULLDOZER!



IT'S A HIT! NO ADDITION TO THE "CATERPILLAR" LINE HAS WON HIGHER PRAISE THAN THE NEW "CATERPILLAR" BULLDOZER. HERE ARE A FEW SAMPLES OF THE WAY USERS FEEL ABOUT IT:

From Walter O'Neill, contractor, Havre, Montana

"Unquestionably it's the best and last word in 'dozers. The ability to tilt the blade enables doing lots of work that would previously have required an angledozer. We moved 9000 cubic yards in 5 days this past week. This 'dozer beats any we know of."

From Harry Sandora, D7 operator, Conn.

"With the D7 and the 'Caterpillar' Bulldozer blade I can walk these 2-foot stumps right out of the ground."

From S. T. Lambeth, Greensboro, N. C.

"Best darn 'dozer I've ever owned or seen operated. Visibility is perfect; blade extremely rugged and durable; dirt seems to roll from the blade instead of sticking to it; blade reacts very quickly to the controls and it will dig harder material than any other 'dozer of comparable size on the market."

From John Gaston, Main Roads Commission, Queensland, Australia

"I think the 'Caterpillar' 'dozer is the best and most easily controlled of any I have handled. Driving a D7 with 'Caterpillar' 'dozer attached, I loaded 1980 yards of earth in 8½ hours."

**From N. M. Whilden, contractor,
Dallas, Texas**

"I've made no adjustments to this unit in 3 months, where formerly on other equipment adjustment was necessary every day."

**From Jim Calas, farm contractor,
Lakeview, Oregon**

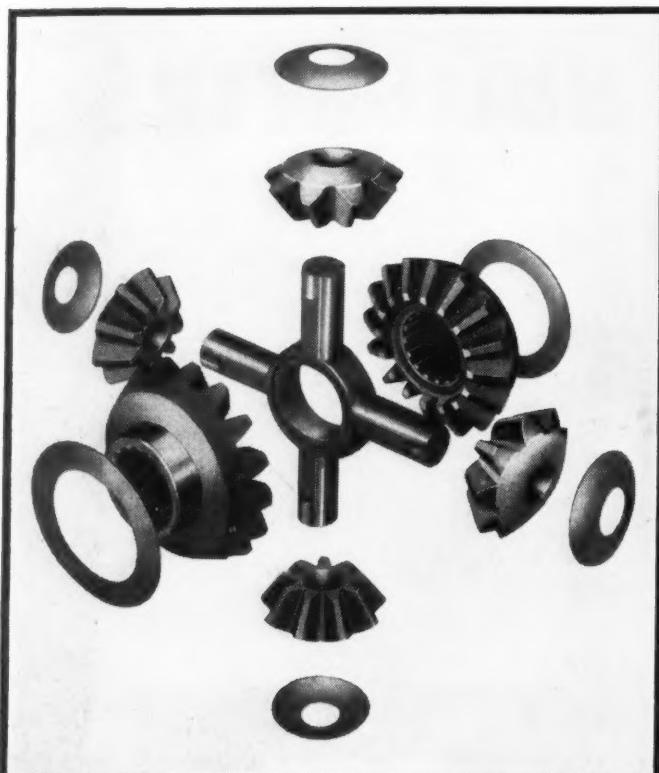
"Since running it a month, am more glad than ever I waited. It does everything a fellow could ask. The 'dozer handles nice and easy and accurate."

**From R. H. Byles, lumberman,
Fresno, Calif.**

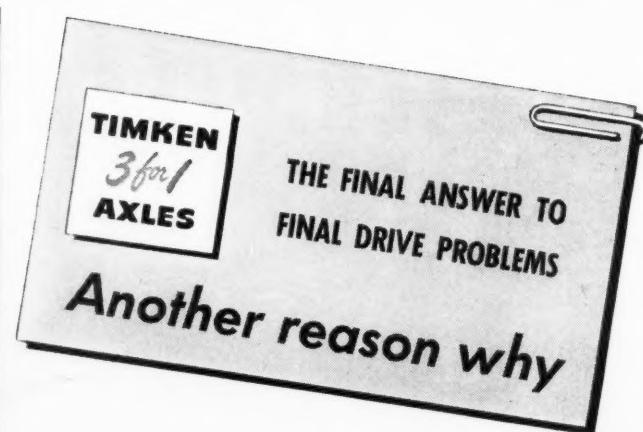
"This outfit is rugged. It's the best dirt-moving 'dozer I've seen."

CATERPILLAR
REG. U. S. PAT. OFF.
DIESEL
ENGINES • TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

STRONGER DIFFERENTIAL



TIMKEN DIFFERENTIAL: Pinions have longer hubs for increased bearing area. Other features include new, longer wearing bronze pinion bushings; new hardened-steel thrust washers between side gears and differential case; spherical hardened-steel thrust washers between pinions and differential case; and new spider with increased trunnion diameter and flats for improved lubrication.

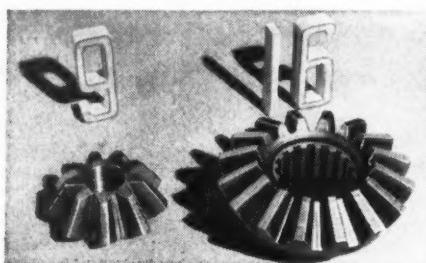


HERE is the heart of every Timken "3 for 1" Axle—the differential! Study its design . . . weigh its advantages in terms of *payoff* to you in increased dependability and longer life!

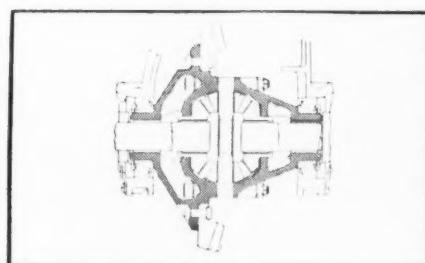
AND REMEMBER, this new, bigger, stronger Timken differential is only one of the many star-studded features of new Timken "3 for 1" Line.

NOW, you can get the correct axle for the work to be done—always! There's absolutely no need to compromise—ever. New Timken "3 for 1" Axles are available in a complete range of capacities. In each capacity you get a choice of three final drives, each interchangeable with the others in the same axle housing, using the same axle shafts.

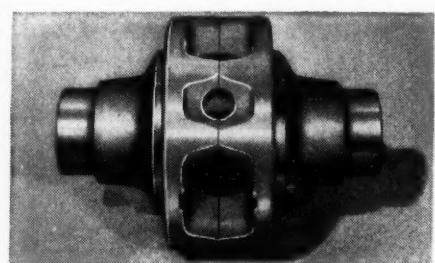
GET the facts—today! Specify Timken "3 for 1" Axles under the next new trucks you buy!



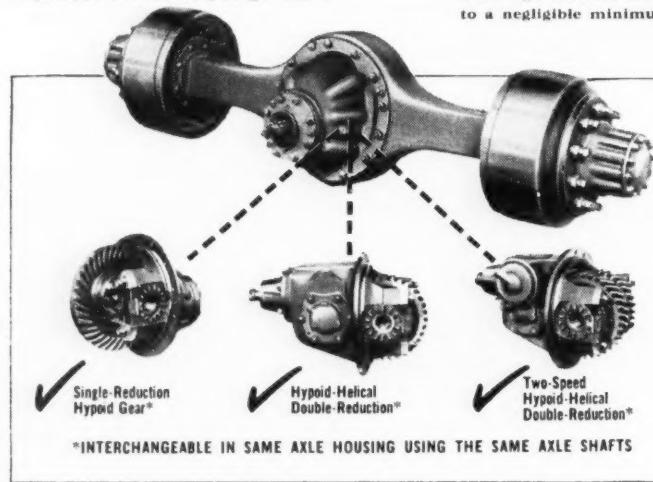
Differentials of Timken "3 for 1" Axles have a new 9-16 tooth combination—stronger body and stronger teeth in both gear and pinion. Here's greater capacity, better service, longer wear!



New "Conical Truss" design differential case of hypoid single-reduction axles makes possible an unusually rigid mounting for the hypoid gear, reducing deflection under radial and thrust loads to a negligible minimum.



Symmetrical differential cases of double-reduction and two-speed double-reduction axles are machined from steel forgings of generous proportions, providing the most rigid support for helical gears.



TIMKEN 3 for 1 AXLES

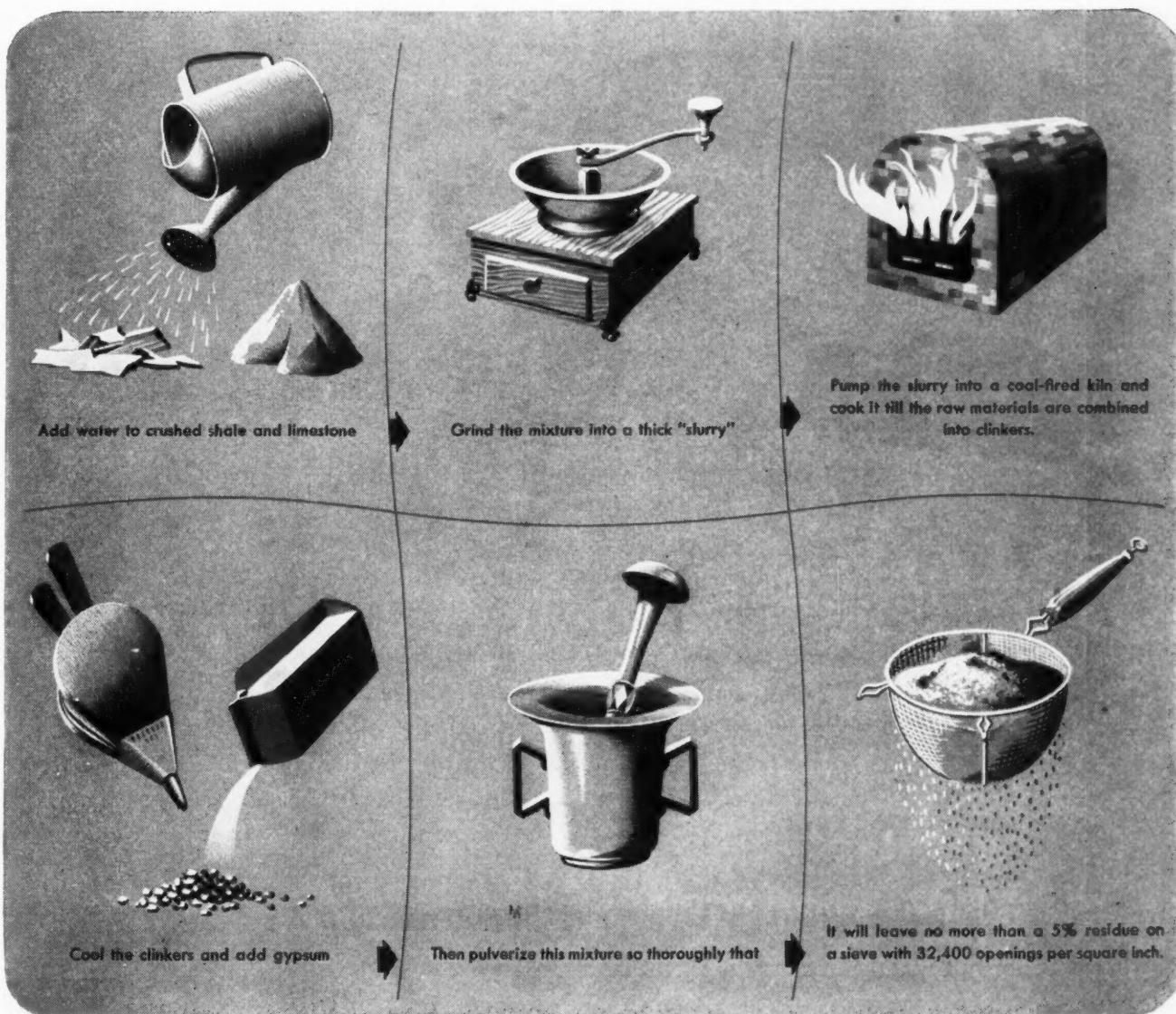
THE TIMKEN-DETROIT AXLE COMPANY

DETROIT 32, MICHIGAN

WISCONSIN AXLE DIVISION, OSHKOSH, WISCONSIN
TIMKEN AXLE BRAKE DIVISION, DETROIT, MICHIGAN

Follow these simple directions

HERE'S HOW TO MAKE PORTLAND CEMENT:



That's portland cement. Perhaps we should warn you, though, that if you've had no experience along this line you'd be better off letting Cumberland make your portland cement. It takes a lifetime to learn how to do it right.

Cumberland
PORTLAND CEMENT COMPANY
Chattanooga Bank Building • • Chattanooga 2, Tenn.
PORTLAND • HIGH EARLY STRENGTH • AIR ENTRAINING • MASONRY



WHY Preformed

WIRE ROPE?

ACTUAL field reports and authentic user surveys indicate that on many installations *Preformed* wire rope has a longer service life than non-preformed or standard type.

But longer life is but one of the advantages of *Preformed*. A *Preformed* wire rope is also easier and safer to handle. And here's why:

In *Preforming*, the wires and strands are scientifically pre-shaped to the exact helical positions they will assume in the finished rope . . . thus assuring freedom from internal stress.

This freedom from liveliness or twistiness makes your more flexible *Preformed* rope less likely to kink . . . enabling you to rig it more speedily . . . with less time out for repairs and replacements. Furthermore, when your *Preformed* rope becomes worn, broken wires lie flat and in place. They do not unravel, porcupine or protrude jaggedly to damage adjacent lines or injure your workmen.

FOR PREFORMED CONSTRUCTION PLUS UNVARYING QUALITY STANDARDS

U·S·S AMERICAN *Tiger Brand* Excelley Preformed

As the world's largest supplier of wire rope, we can furnish either Tiger Brand Excelley Preformed or Non-preformed Rope. There are many applications where our Excelley Preformed can improve service . . . where the increased service of Excelley more than pays for the increased cost of Preformed rope. If there is any question, our engineers are at your service. Our aim is to supply the most desirable rope for any service you have. We welcome your inquiries.

IMMEDIATE DELIVERY — All types and sizes

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

COLUMBIA STEEL COMPANY

San Francisco

Tennessee Coal, Iron & Railroad Company, Birmingham,
Southern Distributors

United States Steel Export Company, New York

UNITED STATES STEEL



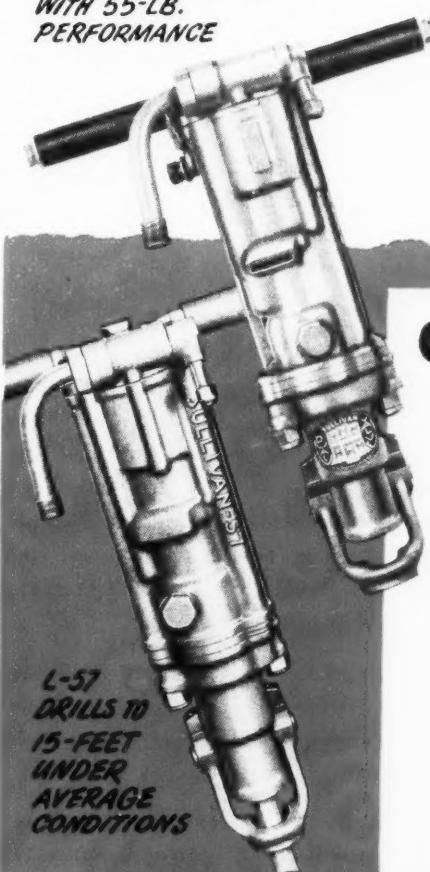


Less Power To
DRILL MORE FOOTAGE
with
SULLIVAN

L-47
45-LB. CLASS DRILL
WITH 55-LB.
PERFORMANCE

SILVER STREAK

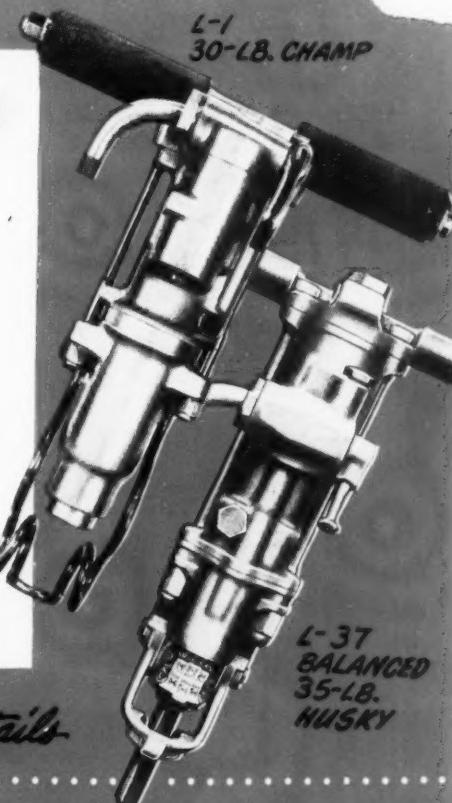
**CADMIUM PLATED
ROCK DRILLS**



L-57
DRILLS TO
15 FEET
UNDER
AVERAGE
CONDITIONS

**Cadmium Plating
means**

**LONGER LIFE
BETTER
LUBRICATION
NO RUSTING
PREVENTION
OF RUCKING**



L-1
30-LB. CHAMP

L-37
BALANCED
35-LB.
HUSKY

Write for Bulletins Giving Full Details.



*Consult a
Joy Engineer*

**SULLIVAN DIVISION
JOY MANUFACTURING COMPANY**

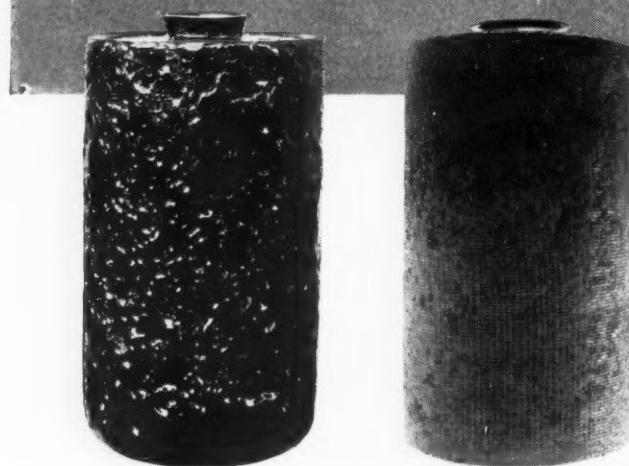
GENERAL OFFICES: HENRY W. OLIVER BUILDING

PITTSBURGH, PENNSYLVANIA

WAD C22

More effective filter operation with...

Stanolube HD

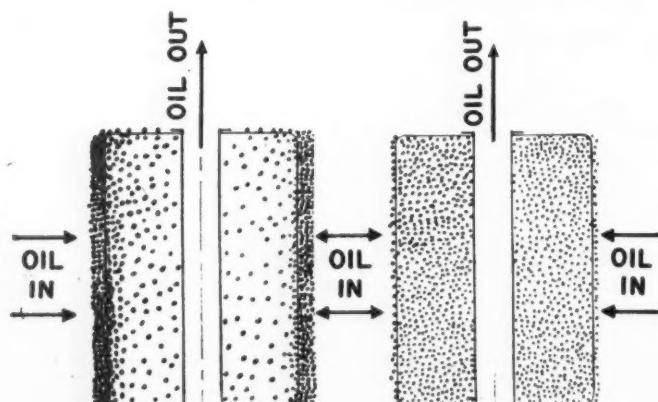


ABOVE

Filter, at the left, has become surface-clogged by crankcase contaminants. At the right, filter shows result of effective filtering obtained with use of detergent-dispersant Stanolube HD.

BETWEEN

Cross-section drawings of filters show clearly how Stanolube HD does not coat and clog filter surfaces.



- Surface clogging of oil filters raised operating costs of a midwest fleet of model WA-22 White trucks. Several detergent oils had been tried. But in each case, contaminants rapidly accumulated on the surfaces of the waste-type filters and clogged them long before their capacity had been reached. Frequent filter changes were necessary.

Stanolube HD was then given this job. Because of its detergent-dispersant action, Stanolube HD prevented rapid accumulation of deposits on the filter surfaces. Fuel residues and other contaminants were held suspended in a finely divided state and were gradually removed from the oil as it penetrated the filtering medium. In addition, there were fewer contaminants for the filters to handle because the high stability of Stanolube HD kept oil-oxidation products to a minimum.

The fleet owner reports that the more effective filtering obtained with Stanolube HD resulted in cleaner engines, with filter changes reduced to recommended periods.

For more information on the advantages of this superior heavy-duty oil, write for the illustrated Stanolube HD booklet. For help in testing this oil in your fleet engines, ask for the services of a Standard Oil Automotive Engineer. Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL COMPANY (INDIANA)

**STANDARD
SERVICE**



**DOLLAR
for DOLLAR**
of First Cost and Operating Cost
THE
3 1/4-SWING BADGER
MOVES MORE MATERIAL . . .
FASTER AND CHEAPER



Check these BADGER FEATURES

- ✓ Lighter Swinging Weight ✓ Extra Dumping Height
- ✓ Greater Stability ✓ Extra Reach
- ✓ Better Visibility ✓ Easily Portable
- ✓ No Tail Swing ✓ Fully Convertible

AND ASK YOUR NEARBY A-W DEALER to tell you the whole story of how the versatile BADGER will save time and make money for you.

AUSTIN-WESTERN COMPANY
AURORA, ILLINOIS, U.S.A.

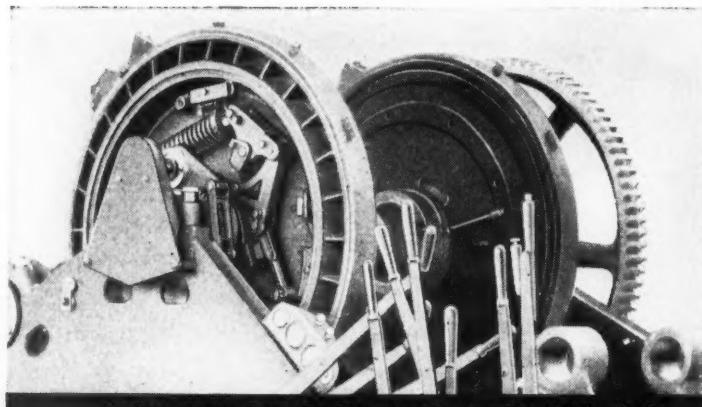
WHEEL MOUNTS



BUILDERS OF ROAD MACHINERY
Austin  **Western**

KOEHRING

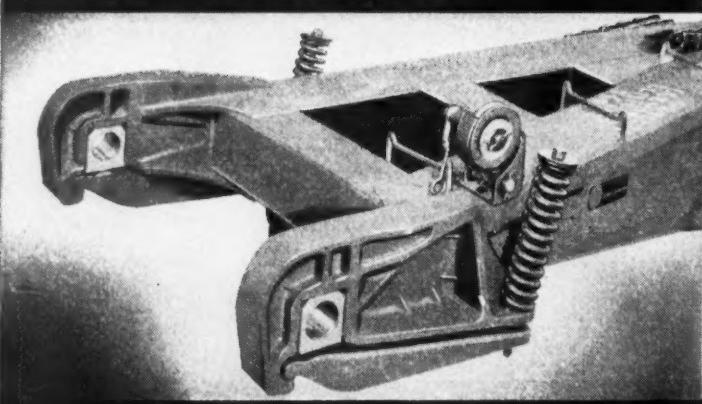
Output Per Shift



Engine power does the heavy work, supplies 90% of the effort when operator sets these main drum clutches on the Koehring 605.



Light lever pull, 7 lbs. average, eliminates operator fatigue. No costly production letdown at shift end.



Two coil-spring shock absorbers, one on each side of boom-foot, cushion out shocks and stresses of rock handling.

1 New Exclusive Power Clutch Steps Up Operator Efficiency

Top production all day long, because the Koehring 605 is easy on the operator. No physical fatigue, because heavy hand-lever pull is eliminated. Engaging the Koehring 605 Power Clutch, takes only 1/10 the lever pull required to set a manual clutch of similar size. Lever pull is rarely more than 7 lbs. No nervous fatigue, because "Feel of Load" has been retained. Clutch is completely responsive.

2 Boom Foot Shock Absorbers Step Up Rock Digging Output

Coil-spring shock absorbers, one on each side of boom foot, protect the Koehring 605 against boom strains and sudden loads. This not only insures against boom troubles and delays, but also speeds up entire digging cycle. With the 605, your operator can use full speed up through the bank without fear of catching a ledge or niggerhead on the corner . . . can use full throttle on the swing, brake sharply over the truck, letting the shock absorber take care of "whip" action.

See your Koehring Distributor for
more information on the 605.



With entire shovel shock-absorber protected, it's safe to handle big dipper loads like this. No danger of boom trouble here.

KOEHRING COMPANY Milwaukee 10, Wis.

Subsidiaries: JOHNSON • KWIK-MIX • PARSONS

605 SHOVEL

Stepped Up 2 Ways



KOEHRING DUMPTOR: A Hauling Unit Built by a Shovel Manufacturer



Gravity Dump . . . No Body Hoist: Touch release lever and gravity tilts scoop shaped body instantaneously. Always dumps fast and clean. No maintenance on hoist unit.

High Speed . . . Reverse or Forward: No slow turns shuttling from shovel to dump. Dumptor travels as fast in reverse as forward. Eliminates time wasted turning, speeds spotting.



Closely following form setters, fine-grade machine prepares second lane sub-grade for paving.

Building New Roadway on Pennsylvania's Skippack Pike



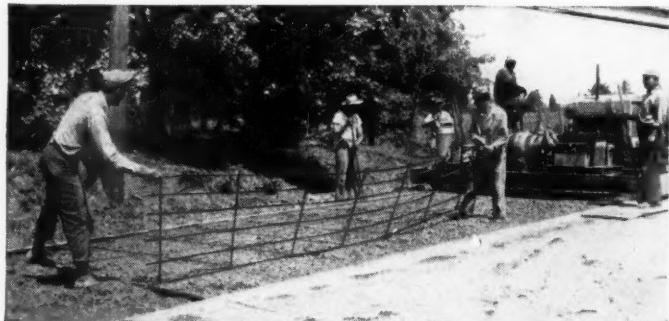
Left to right: M. W. Sweeney, Senior Construction Inspector; J. C. Feltman, Mixer Foreman; Charles J. Wolf, Concrete Superintendent; E. F. Rodia, Asst. Construction Inspector; and W. J. Houck, Resident Engineer.

Taken between Skippack and Bethel Hill, Pa., these photographs show construction on Route 73, commonly called the Skippack Pike, running northwest from the Tacony-Palmyra Bridge over the Delaware River. This stretch of the highway, more than two miles in length and replacing a section long in need of repair, is being built by John H. Swanger, Lancaster, Pa. Reinforcing bars, bar mats, road joints and guard rail were among the highway products furnished by Bethlehem.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation

STEEL FOR HIGHWAYS

Road Joints • Reinforcing Bars • Bar Mats • Guard Rail
Tie-Rods • Guard Rail Posts and Brackets • Spikes
Wire Rope and Strand • Hollow Drill Steel
Fabricated Structural Steel • Bolts and Nuts
Sheet and H-Piling • Timber Bridge Hardware



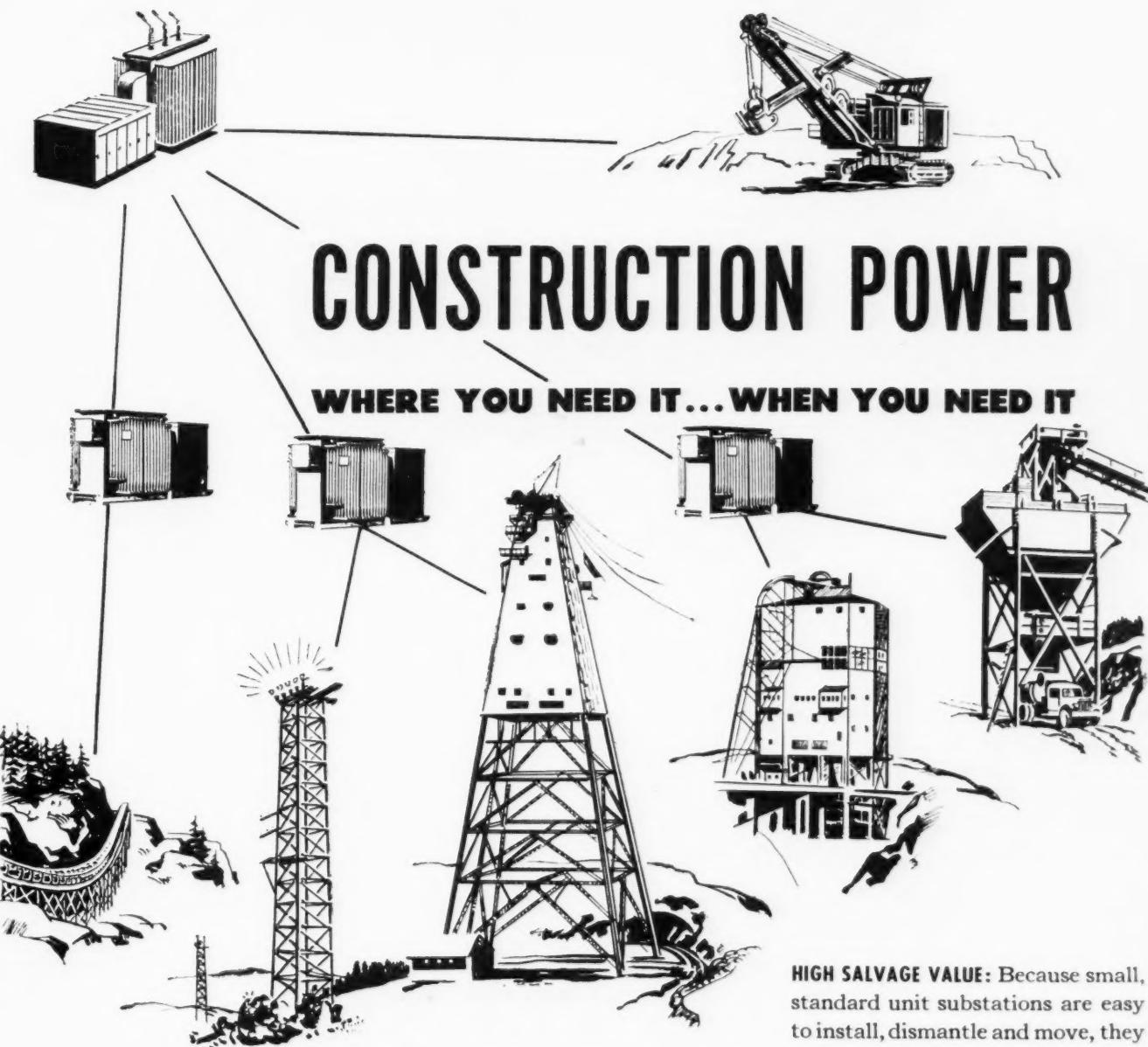
Bethlehem Hinged Bar Mat goes into place. Note that mat is being handled by only two men.



Seconds after steel is placed, paver drops batch over Bethlehem Hinged Bar Mats.



As transverse screed (foreground) trims off excess cement, longitudinal screed smooths concrete for hand-brushing.



CONSTRUCTION POWER

WHERE YOU NEED IT... WHEN YOU NEED IT

Easy to install, move or expand...G-E LOAD-CENTER DISTRIBUTION SYSTEMS offer reliable, flexible power for large construction projects

Here's how General Electric unit substations, used so successfully in strip mining, can be applied to large, long-term construction jobs . . . at a profit. Their high salvage value, portability and ease of installation will appeal to farsighted contractors. Power costs are reduced, too, by locating the substations near their loads, thereby keeping voltage high and cable short and light. Other advantages:

SAFE: Metal-clad unit substations combine transformers and circuit-

breakers in one factory-assembled package; breakers protect your equipment from overload, the metal enclosure protects personnel from injury.

EASY SERVICING: Maintenance personnel work *on the ground* safely, quickly; no poles to climb.

ECONOMICAL: Evaluating the good voltage regulation, short-circuit protection and high service continuity provided, G-E load-center distribution systems give you more for your power-equipment dollar.

HIGH SALVAGE VALUE: Because small, standard unit substations are easy to install, dismantle and move, they may be moved to your later jobs at a substantial saving in man-hours.

These are only a few of the advantages of modern load-center distribution systems for construction work. Let your G-E representative show you the entire picture; he will study your power requirements and help you select the best system for your particular needs. *Apparatus Department, General Electric Co., Schenectady 5, N. Y.*



**ELECTRIFIED
CONSTRUCTION**
BETTER PRODUCT ★ LOWER COST

GENERAL ELECTRIC

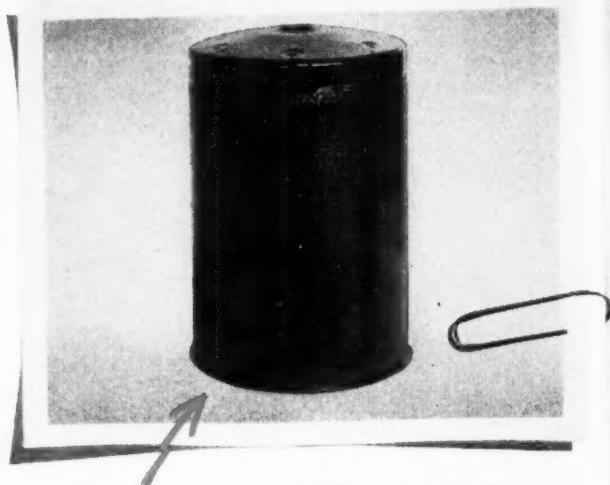
LUBE MEMO

How Joe stopped Filter Clogging



Joe says filters have
gummed up like this
after about 600 hours
on oil he's been using

Joe says nothing but
RPM Delo Oil in his
Diesels from now on



Here's how the filter looked
after 600 hours on RPM Delo
Diesel Engine Lubricating Oil.
Joe finds RPM Delo Oil keeps
filters clean because:

1. It's compounded to resist oxidation and minimize sludge.
2. Its "detergent" cuts down sludge.
3. It remains stable in the presence of moisture.

Set up trial on RPM
Delo Oil Today!



STANDARD OF CALIFORNIA • San Francisco, Calif.
THE CALIFORNIA COMPANY • Denver, Colo.

STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA OIL COMPANY • New York

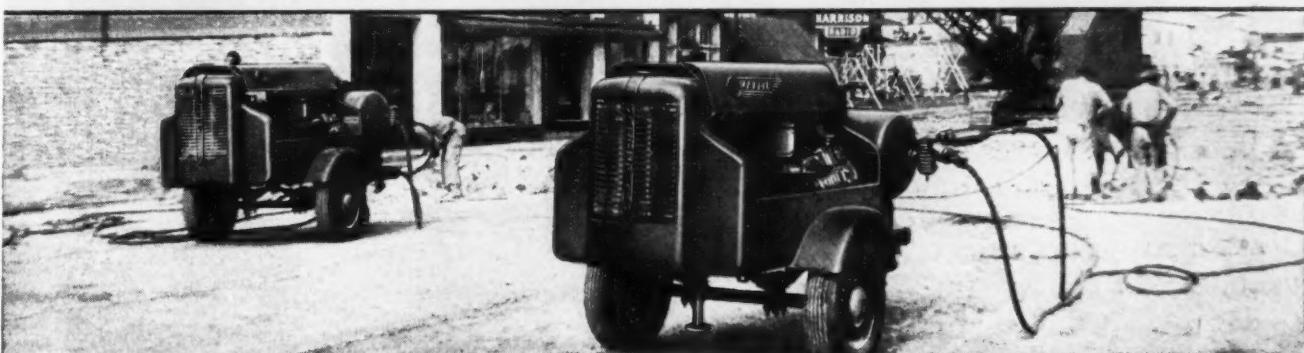
**AIR
PLUS**

JAEGER COMPRESSOR

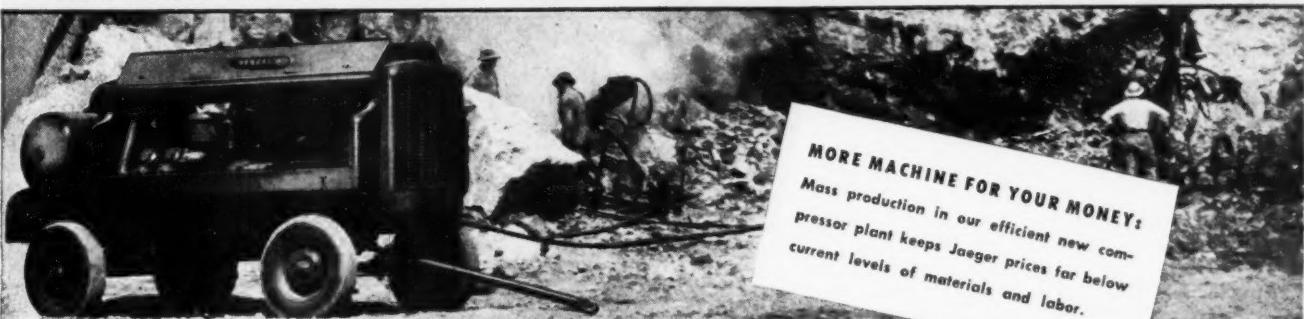
BUILT TO MICRO-PRECISION + 75%-100% LARGER "ULTRA LAPPED" VALVES



FORCE-FEED LUBRICATION + SLOWER, COOLER PISTON SPEED (800 F.P.M.)



DELIVER MORE AIR PER POUND OF FUEL AND COOLER, DRIER AIR

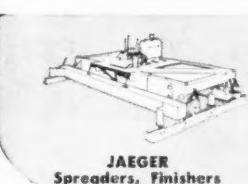


(WITHIN 100° OF ATMOSPHERE) WITH NOTABLY LOW UPKEEP

The keenest buyers, the biggest users are buying Jaeger "AIR PLUS" Compressors for **LOW COST** air. Sizes 60 to 600 cu. ft. Service in nearly 130 cities. See your Jaeger distributor.

THE JAEGER MACHINE COMPANY, Columbus 16, Ohio

REGIONAL OFFICES 8 E. 48th St. 226 N. LaSalle St. 235-38 Martin Bldg.
 NEW YORK 17, N. Y. CHICAGO 1, ILL. BIRMINGHAM 1, ALA.



JAEGER
Spreaders, Finishers



"SPEEDLINE"
Concrete Mixers



"SURE PRIME"
Contractor's Pumps

JAEGER
Engineered EQUIPMENT

"DUAL-MIX" TRUCK MIXERS, AGITATORS — HOISTING ENGINES, SELF-RAISING TOWERS — CONCRETE AND BITUMINOUS PAVING EQUIPMENT

Delivering the Power on Manitowoc's SPEEDCRANES

For High Yardage
and Low Maintenance



Partial view
of Manitowoc
Speedcrane
Engine show-
ing DIAMON-
D Roller Chain
Drive.

As experienced earth movers know, steady hour-by-hour and day-by-day dependability add up to greater yardage at lower cost.

Manitowoc's engineers have assured this dependability of their sturdy Speedcrane line by delivering the power reliably and economically via DIAMOND Roller Chain Drives.

As positive as gears, these Roller Chains transmit power without slip—they share the load over many sprocket teeth,—have great reserve strength,—and operate smoothly over a wide speed range at a maintained high efficiency of 98-99%.

The cooperation of our engineering staff is available when changes or new models are being contemplated. This assistance may help save your time in selecting capable drives. DIAMOND CHAIN COMPANY, Inc., Dept. 418, 402 Kentucky Avenue, Indianapolis 7, Indiana. *Offices and Distributors in All Principal Cities.*



Wickwire Rope is "Tissue Tested"

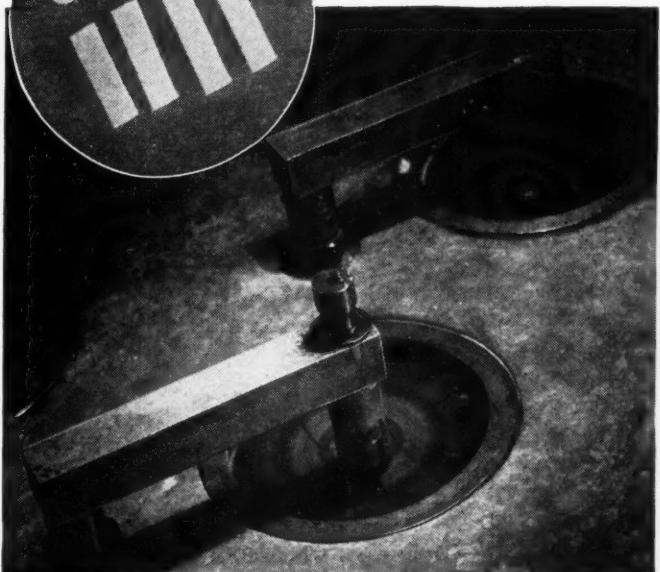
With the same scientific care a physician uses in examining human tissue, technicians in the Physical Testing Laboratory of Wickwire Spencer's Rope Mill test samples of wire imbedded in plastic "buttons." Samples from coils of wire are ground, polished, etched, microscopically examined and the findings recorded.

What's this got to do with wire rope? The grain size has an important bearing on the life span of the wire. Because the quality of the steel in the rope wire is just as important for dependable service as is the construction of the rope, Wickwire uses only such wire as passes the Physical Testing Laboratory's exacting standards.

For the utmost in performance, safety and long life, specify Wickwire Rope. It is available in all sizes and constructions, both regular lay and WISSCOLAY Preformed. Call on Wickwire distributors and Wire Rope engineers to help solve your wire rope problems and supply the right rope for your needs.

HOW TO PROLONG ROPE LIFE AND LESSEN ROPE COSTS

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made work easier and rope last longer. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write, Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Massachusetts.



WICKWIRE ROPE

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass.

EXECUTIVE OFFICE—500 Fifth Avenue, New York 18, N. Y.

SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Philadelphia • Tulsa • Fort Worth • Houston • New York

PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California





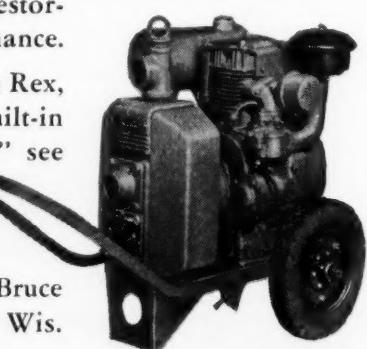
"Reminds me of my Rex Pump!"

A Rex "Easy-Flow" Pump is always in the prime of life, thanks to its exclusive *adjustable* air peeler. For the priming efficiency of any self-priming pump is dependent upon its ability to peel air from the impeller. Rex assures top efficiency for the lifetime of the pump because Rex has the only peeler that can be adjusted to compensate for wear.

And, as a further aid to efficiency, Rex Pumps have a replaceable steel wearing plate that maintains the close tolerances between the side of the impeller and the volute so necessary for

proper maintenance of vacuum. When wear takes place, the plate can be easily and inexpensively replaced, restoring original performance.

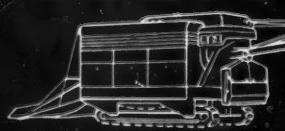
For all the facts on Rex, the pumps with the built-in "Fountain of Youth," see your local Rex Distributor or write direct to Chain Belt Company, 1664 W. Bruce Street, Milwaukee 4, Wis.



CHAIN BELT COMPANY of MILWAUKEE

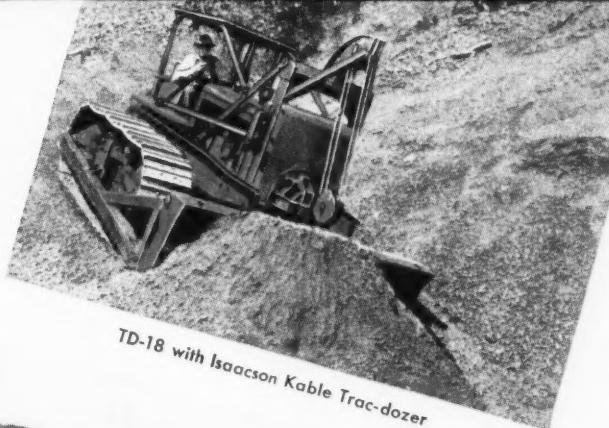


CONSTRUCTION MACHINERY

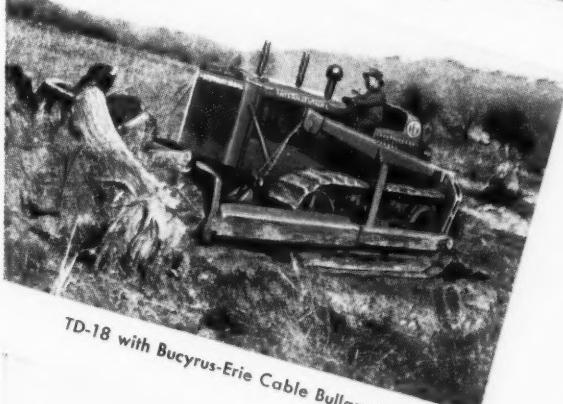


When Tractor and Equipment are ONE Machine

It's an **INTERNATIONAL**



TD-18 with Isaacson Kable Trac-dozer



TD-18 with Bucyrus-Erie Cable Bullgrader



TD-14 with Isaacson
Hydraulic Trac-dozer



with **Matched Equipment**

TD-18 with Bucyrus-Erie
Hydraulic Bullgrader

When you buy an International Crawler and matched bulldozer from your International Industrial Power Distributor you get a completely integrated machine. All the equipment shown in the photographs has been designed by its manufacturer to meet the requirements established by International engineers.

Each bulldozer provides the benefits of its maker's long experience in building earth-moving equipment plus the features that make it an integral part of the International tractor for which it was built.

This means that your International Crawler and equipment becomes *ONE efficient machine* for economical, profitable work.

You cannot find a better buy. It's the perfect combination of specialized power and specialized equipment.

Industrial Power Division

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue • Chicago 1, Illinois



TD-14 with Heil
Trailbuilder

INTERNATIONAL **POWER**

CRAWLER AND WHEEL TRACTORS • DIESEL ENGINES • POWER UNITS

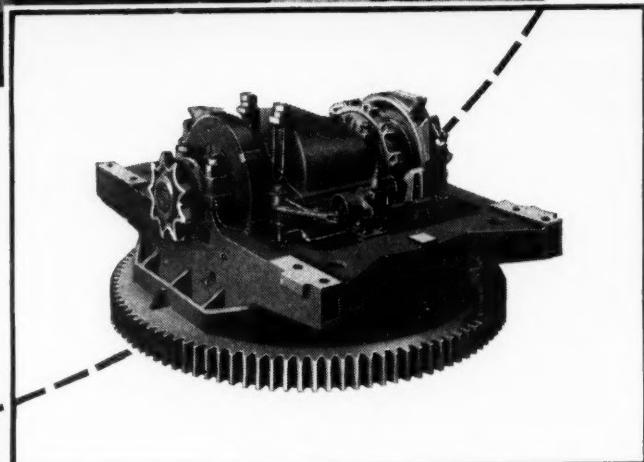


Steer Without Stopping

with OSGOOD Air Control

Smooth, effortless steering—without stopping the forward motion of the machine—with the cab in any position—that's OSGOOD Air-Controlled Steering! Independent air cylinders, actuated by a small lever in the cab, disengage and set steering brakes on the driving sprockets instantly, eliminating the need to hunt for a point where a steering lock can be engaged.

OSGOOD Air Control means faster, safer operation . . . more work done in



less time, with less effort. Plan now to choose an OSGOOD. A complete line of power shovels, draglines, cranes, clamshells, backhoes and pile drivers . . . a model for every type of work.

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO.  **THE GENERAL CO.**

MARION OHIO
DIESEL, GASOLINE OR ELECTRIC POWERED • $\frac{3}{8}$ TO $2\frac{1}{2}$ CU. YD. • CRAWLERS & MOBILCRANES



Proper balance of *Power*

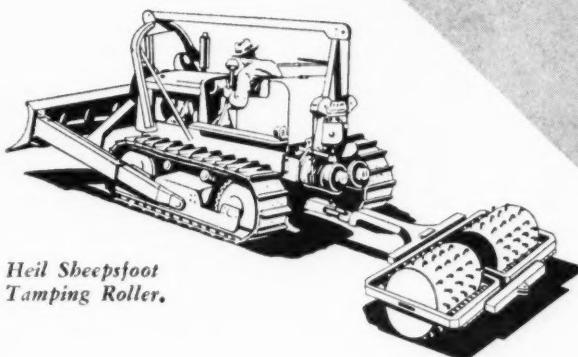
**...that's why Heil Cabledozers
move more dirt and reduce costs**

Get in and dig — that's what your tractors have to do if you are going to move dirt economically. They must make full use of their tractive power.

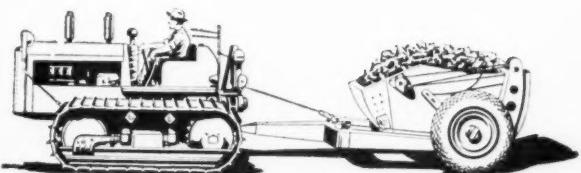
Taking this into account, Heil designed its Cabledozers for International Crawler Tractors so that tractor balance is not disturbed in any way. There is no nosing down or rearing up. Instead, you get full driving and penetrating power at the blade.

That is what Heil calls proper balance of power and — that is why famous Heil Cabledozers cut cleanly, and smoothly, and move more dirt.

Literature describing many other Cabledozer advantages is available. Write for it or see your International Industrial Power distributor.



*Heil Sheepsfoot
Tamping Roller.*



*Heil 3 1/2 yard, 2-wheel
rear-dumping Cable Scraper.*

THE HEIL CO.

GENERAL OFFICES

• MILWAUKEE 1, WISCONSIN

A NEW...LARGER...MORE POWERFUL

Bulldozer-Shovel



OSCILLATING TRACKS

Tracks are not "tied-down" but oscillate freely as in normal tractor operation. Means better traction — and level cutting edge at all times.

TIP-BACK BUCKET

Bucket tips back automatically in carrying position to prevent spillage. Also assures full bucket capacity and better cutting action in digging range.

HYDRAULIC BUCKET CONTROL

Bucket is dumped and returned by hydraulic power. Reduces operator fatigue, eliminates maneuvering to close bucket, relieves tractor and vehicle being loaded of shocks.

DOWN PRESSURE

Double acting rams permit tractor weight to be applied to Bucket or Bulldozer cutting edge, for easier penetration into hard materials.

Here is a *real* Tractor Shovel, the outstanding machine in the 2 yard class. From its long, ground gripping tracks on up, it's every inch a superior unit — built to deliver more yardage, consistently, over an extremely wide range of Shovel or Bulldozer work.

Built into the powerful TD-14 International Diesel the Hough Bulldozer Shovel provides full visibility in every direction: tractor frame mounting to permit free track oscillation; lowest over-all height; automatic TIP-BACK Bucket; simplified hydraulic control; hydraulic Bucket control; powerful crowding action coupled with positive hydraulic down pressure. Compare before you buy — do you know of any other unit that gives you all these features?

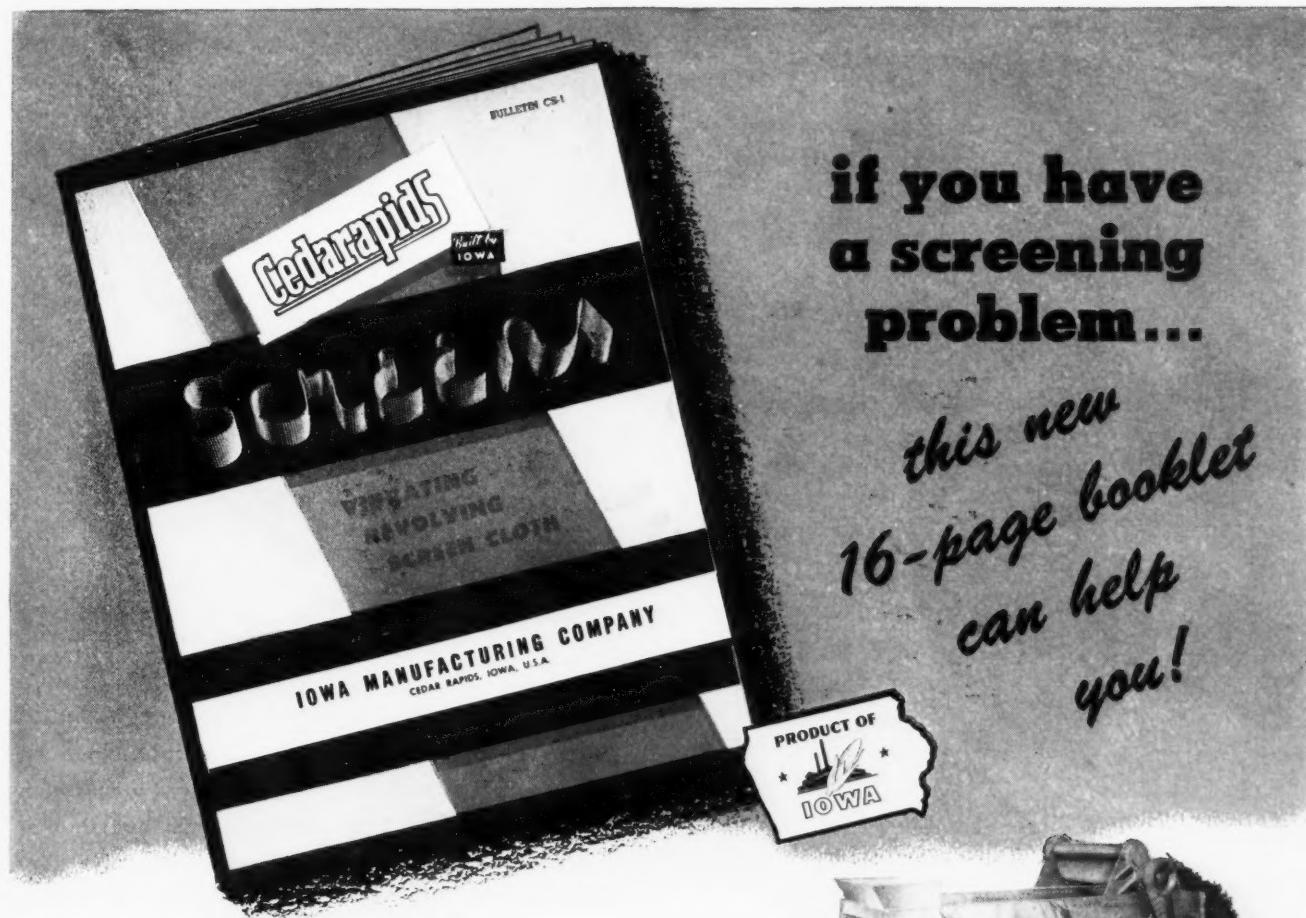
The Model 14 "packs a mighty wallop" — it's a big machine, with plenty of weight for traction; plenty of power for tough going, built long, wide and low for greatest stability and maneuverability. Over 25 years of engineering experience in building thousands of Tractor Shovels is engineered into the Model 14. For complete details see your International-Hough industrial distributor today!



MATERIAL HANDLING EQUIPMENT SINCE 1920

THE FRANK G. HOUGH CO.

706 Sunnyside Ave., Libertyville, Illinois



**if you have
a screening
problem...**

*this new
16-page booklet
can help
you!*



Cedarapids Horizontal Vibrating Screens give you more action, more uniform vibration, more efficiency, more capacity, more accessibility and more constant operation. Sizes from 2' x 8' to 4' x 12' in single and double decks.



Cedarapids-Symons Horizontal Vibrating Screens are specially suited for asphalt plants because they can be completely enclosed with the vibrating mechanism out of the heat and dust zone. Sizes from 2' x 6' to 4' x 12' in single, double and triple decks.



Cedarapids Revolving Screens are recommended for screening operations where a tumbling, scrubbing action is necessary to break up clay formations. Available with scrubbers and sand jackets. Sizes in any length with diameters from 2' to 6'.

**IOWA MANUFACTURING CO.
CEDAR RAPIDS, IOWA, U.S.A.**

The Iowa Line of Material Handling Equipment Includes
ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS—STEEL BINS
BUCKET ELEVATORS • VIBRATOR AND REVOLVING SCREENS
STRAIGHT LINE ROCK AND GRAVEL PLANTS • FEEDERS—TRAPS
PORTABLE POWER CONVEYORS • KUBIT IMPACT BREAKERS
DRAG SCRAPER TANKS • WASHING PLANTS • TRACTOR-CRUSHER PLANTS • STEEL TRUCKS AND TRAILERS • PORTABLE STONE PLANTS • PORTABLE GRAVEL PLANTS • REDUCTION CRUSHERS • BATCH TYPE ASPHALT PLANTS

STRUCTURAL



Made in sizes to meet structural requirements, Bethlehem Turnbuckles generally have 6-in. openings between the heads, but are also made with 9-in. and 12-in. openings. Furnished with either right- and/or left-hand threads, with or without stub ends.

Bethlehem Clevises are produced in a complete range of sizes, and are threaded to American Standard Coarse Thread Series, Class 2. Furnished with right- or left-hand threads, with or without pin and cotter.

Made in tap diameters from $\frac{3}{8}$ in. to 4 in., Bethlehem Sleeve Nuts come in lengths from 3 in. to 12 in. Although usually tapped right-hand at one end, left-hand at the other, they are also furnished with right-hand threads throughout.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation



Other Bethlehem Construction Fastenings *
BOLTS and NUTS . . . TIE-RODS . . . SPIKES . . . WASHERS

THE "820" CAN DO MORE... CAN TAKE MORE...because *the hydraulic clutch*

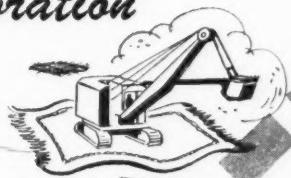
Absorbs Shock

The L-820 is free from the inevitable and unavoidable shocks and impacts, resulting from heavy-duty digging, because its Hydraulic Clutch absorbs and cushions the costly strains and stresses on the mechanism and cables.



Reduces Vibration

The L-820 is a smooth operator because the Hydraulic Clutch eliminates shake and shock.



Improves "Hang On"

You can "slug it out" with rock knowing that the L-820's great digging power won't fade or fizzle but will "hang on" until the most unyielding rock is in the dipper.



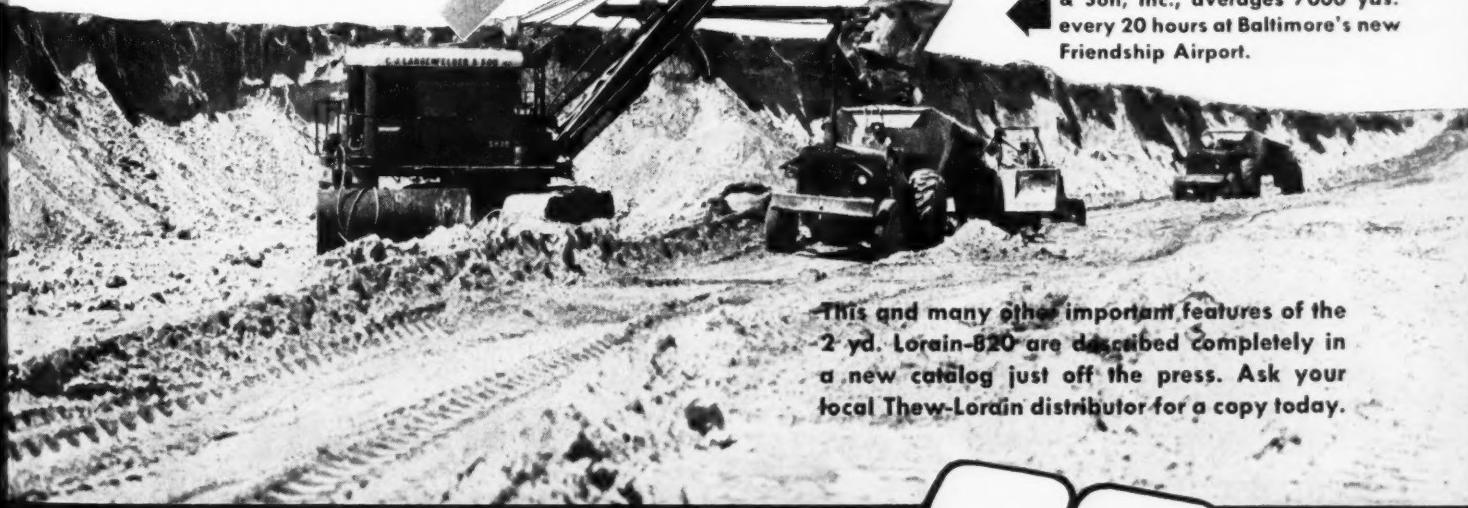
Prevents Stalling

You can't stall the engine under any digging circumstances.



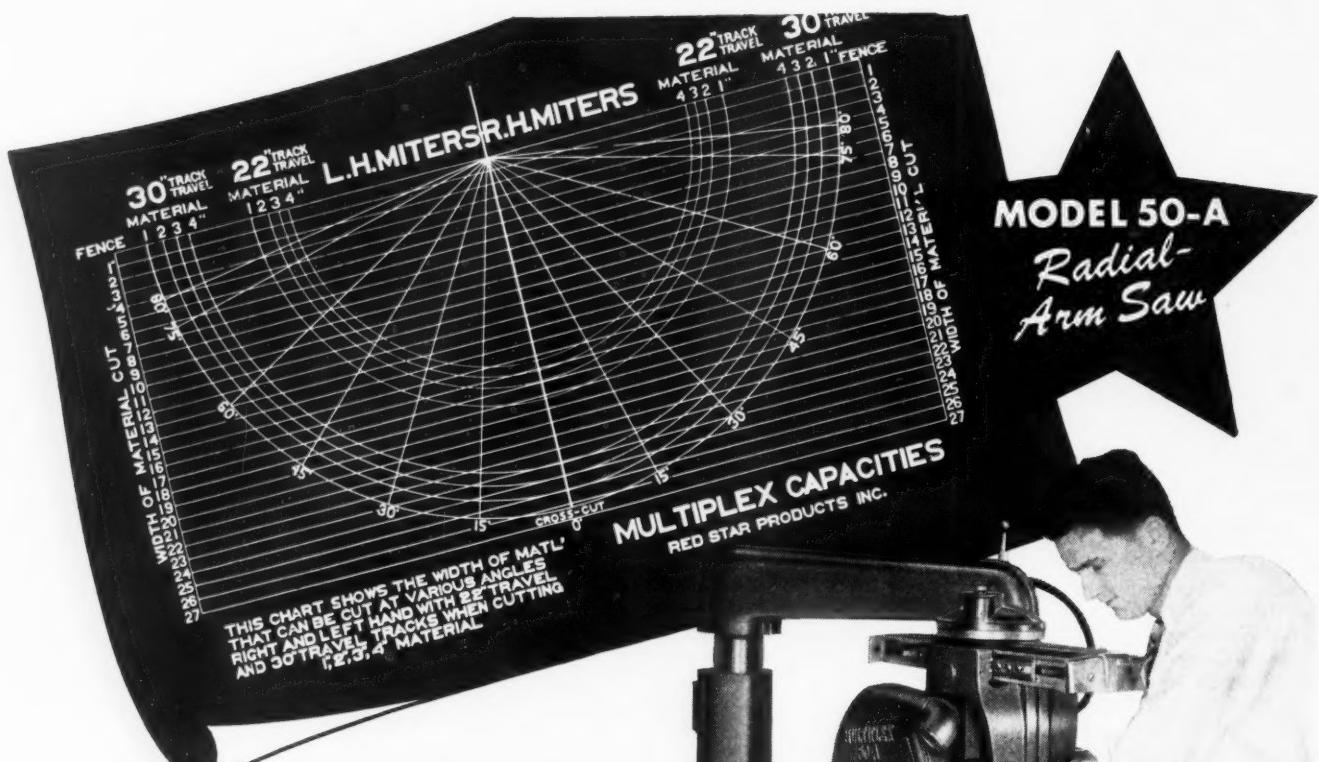
2 yd. Lorain of C. J. Langenfelder & Son, Inc., averages 7000 yds. every 20 hours at Baltimore's new Friendship Airport.

This and many other important features of the 2 yd. Lorain-820 are described completely in a new catalog just off the press. Ask your local Thew-Lorain distributor for a copy today.



THE THEW SHOVEL COMPANY • LORAIN, OHIO

Thew
Lorain® 820

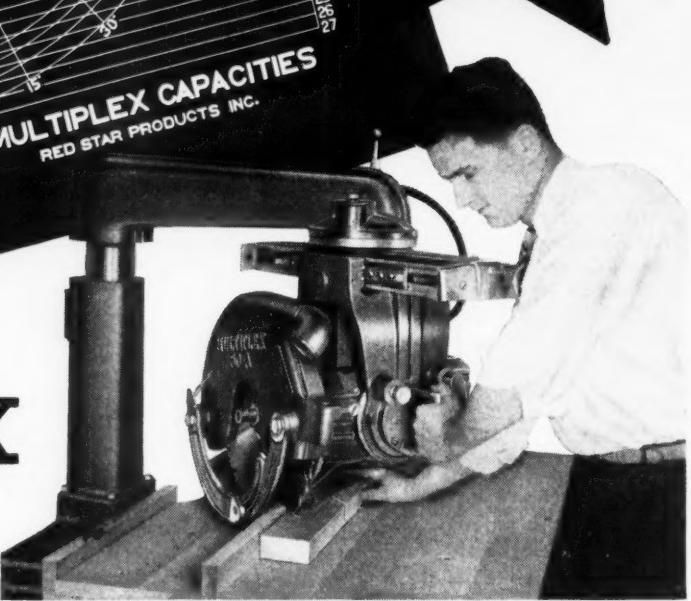


MULTIPLEX *Versatility* PAYS OFF IN MORE PROFITS

In buying a Multiplex Radial Arm Saw you buy performance. Study the chart above and notice the miter capacity of from 0° to 90° Left Hand as well as Right Hand.

Because of the Exclusive Versatile Elbow, or center suspended track, the saw can be readily placed in an unlimited number of positions.

The Movable Table permits full usable travel of the cutting head in any position and—it



enables you to bring the work to you for greater convenience.

Automatic Recording Rip Scales provide accurate and convenient means of measuring the width of rip from either the rear or front fence.

The Ball Bearing Mounted Yoke moves with exceptional ease—self-cleaning balls roll on nitralloy rods.

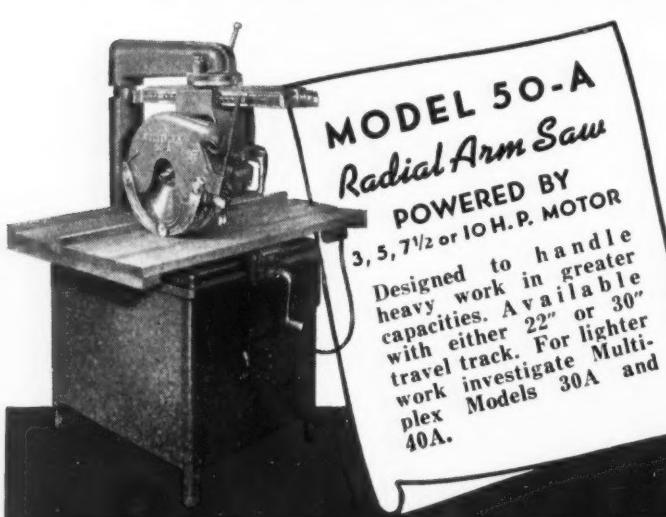
These are features found only in the Multiplex which assure you of more production, greater accuracy and ease of operation.

Write today for literature
or name of nearest dealer.

RED STAR PRODUCTS, INC.

3455 VEGA AVENUE,
CLEVELAND 13, OHIO U. S. A.

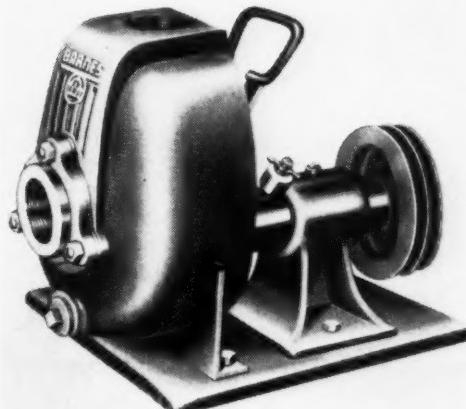
CROSS CUT • RIP • BEVEL RIP • BEVEL CUT OFF
PLOW • SHAPE • DADO • RAFTER NOTCH • MITER
COMPOUND MITER • TENON • RABBET



YOU GET MORE BECAUSE *Barnes* GIVES MORE



- A NEW HIGH IN PUMPING EFFICIENCY
- PRACTICALLY NO MAINTENANCE
- NEXT TO NO WEAR OUT
- MORE GALLONS OF WATER FOR YOUR PUMPING DOLLAR



90 M

3 MU

Quality Control in the manufacture of Barnes Stream-lux Pumps gives the user added assurance that the superiority of Barnes engineering design is matched by like superiority in the materials and workmanship of the finished pumps. Under the Barnes method of *Quality Control*, forty-two different and distinct inspections—the materials, the metal, cores, patterns, machining, assembly—make certain that every Barnes pump comes up to the high standards set for it.

Each Barnes pump, from the largest to the smallest, is rigidly tested for capacities at various heads; for perfection of engine performance; and for clearances, tolerances, and alignment of the entire unit. With nothing short of these *Quality Controls* can you be assured of the superior pumping performance to be found in a Barnes Pump. For sale by leading distributors in all principal cities.

BUY THE BEST — BUY BARNES

BARNES MANUFACTURING COMPANY
MANSFIELD, OHIO

GASOLINE-ENGINE DRIVE —
UNIVERSAL-BELT DRIVE —
AUTOMATIC CENTRIFUGALS

• • •
DIAPHRAGM PUMPS
• • •

Capacities from 3,000 to 90,000
gallons per hour

MAIL THIS
COUPON
TODAY

Barnes Manufacturing Co.
607 North Main Street
Mansfield, Ohio.

Please send me descriptive literature on pumps
marked below:

- Gasoline-engine driven automatic centrifugals
 Universal-belt driven automatic centrifugals
 Diaphragm Pumps

Name _____

Firm _____

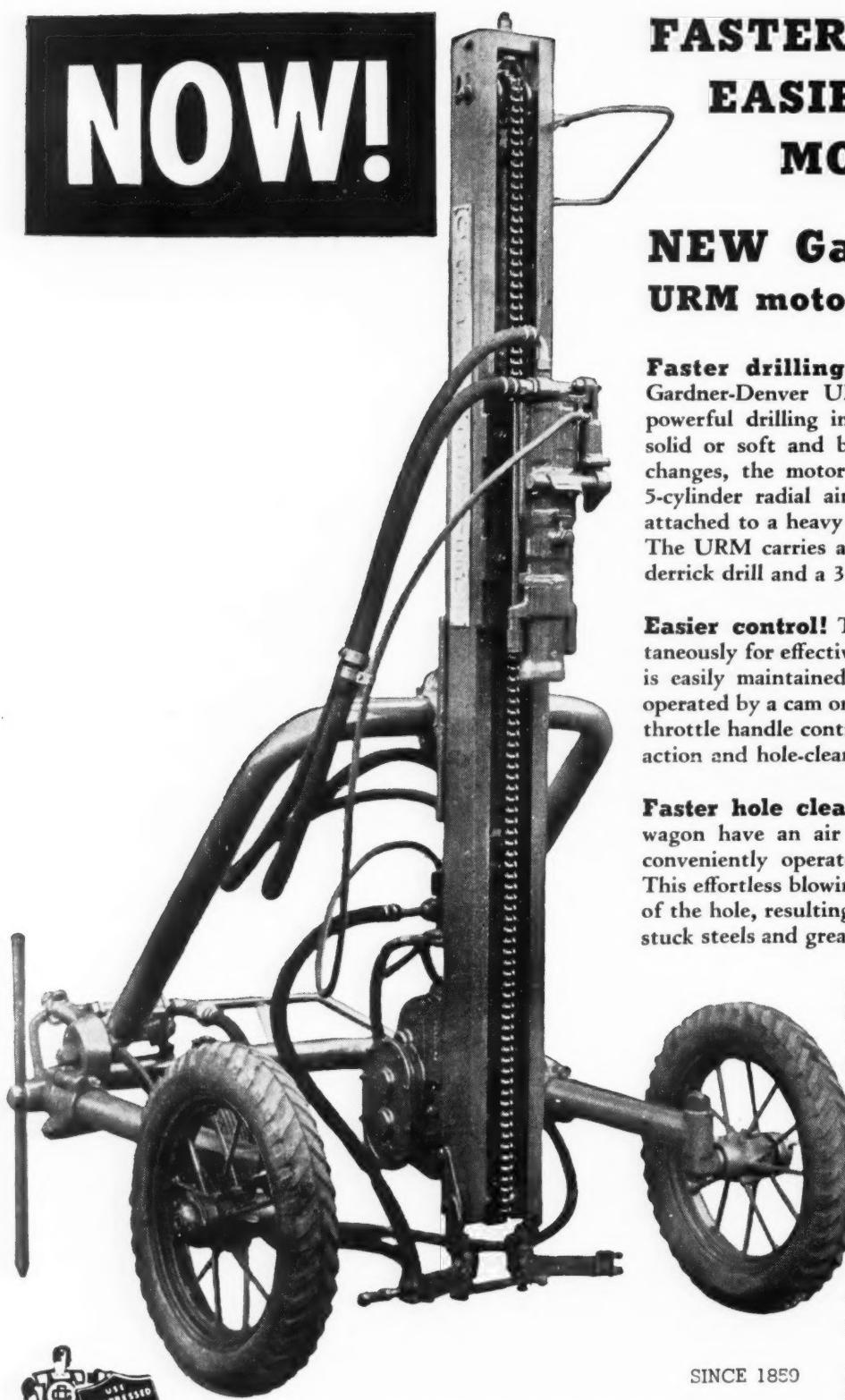
Address _____

City _____ State _____

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**FASTER DRILLING
EASIER CONTROL
MORE FOOTAGE**

**NEW Gardner-Denver
URM motor feed wagon drill**



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SINCE 1859

Faster drilling in any ground! The new Gardner-Denver URM Wagon Drill provides fast, powerful drilling in any kind of ground—hard and solid or soft and broken. Designed for 6-foot steel changes, the motor feed is operated by a powerful 5-cylinder radial air motor driving an endless chain attached to a heavy mounting slide carrying the drill. The URM carries a 3½" or 4" bore Gardner-Denver derrick drill and a 3-pint LO-11 Line Oiler.

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**Quicker steel changes—
Easier spotting!** Drill steel support at top of mast assists in faster steel changing. Centralizer or hole spotter is held in place positively in both open and closed positions.

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Easily maneuverable! With its three pneumatic-tired wheels, the URM is easily moved over rough ground. The RM feed may be adjusted to any drilling position, vertical or horizontal. Adjustable mounting cone on mast allows rapid accommodation to suit ground condition.

For complete information, write
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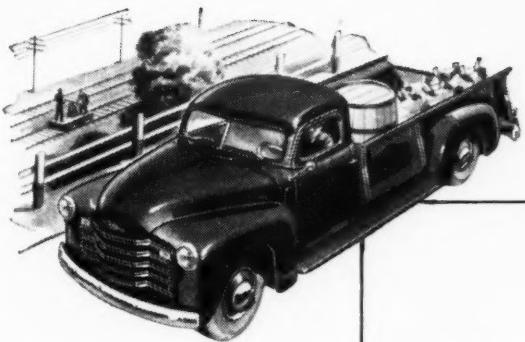
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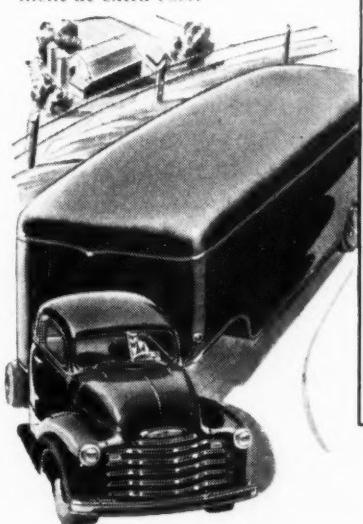
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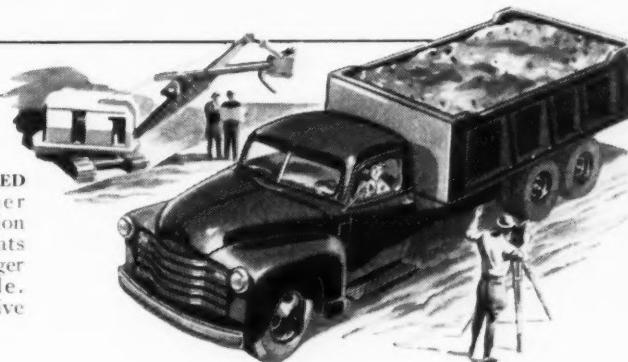
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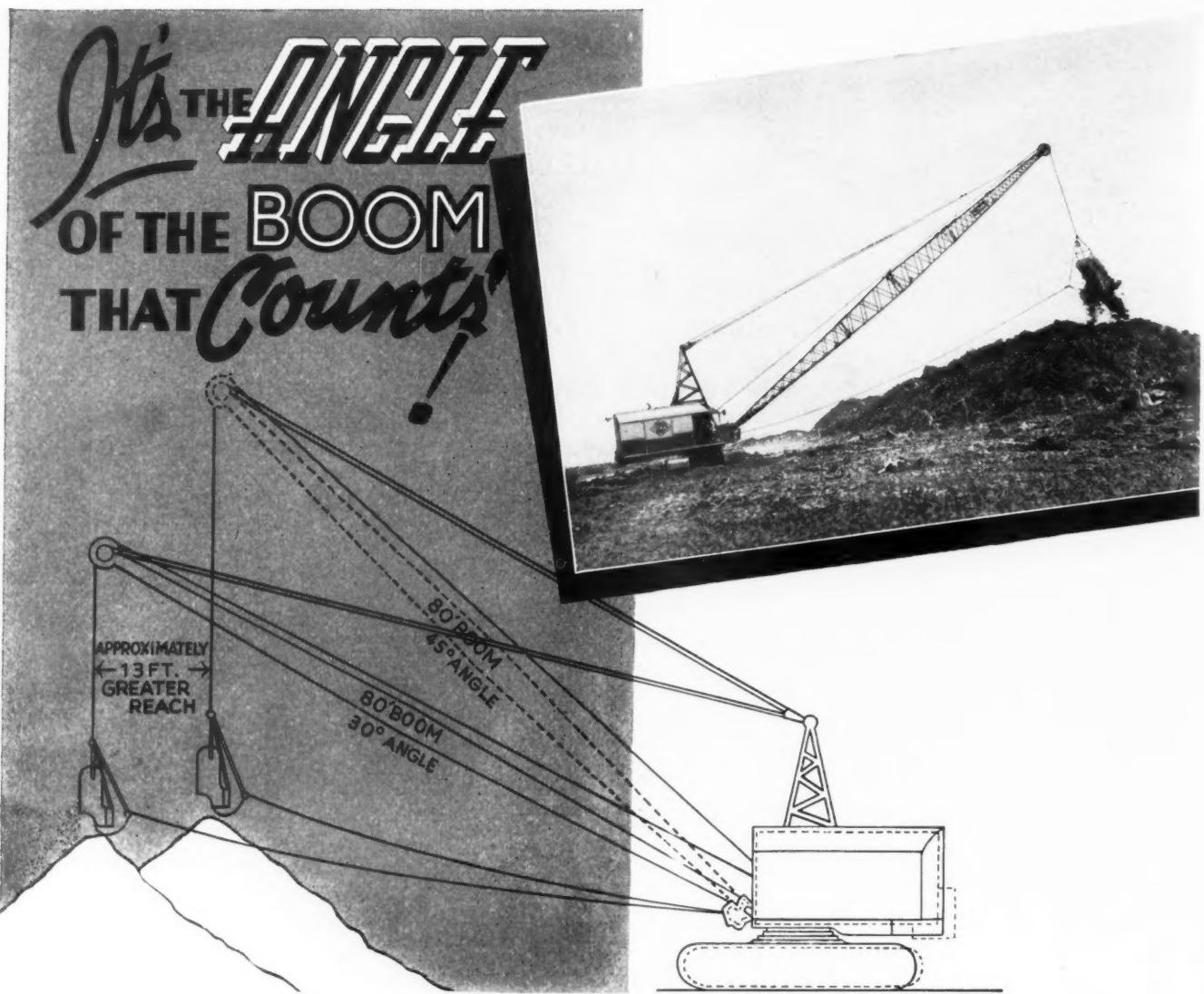
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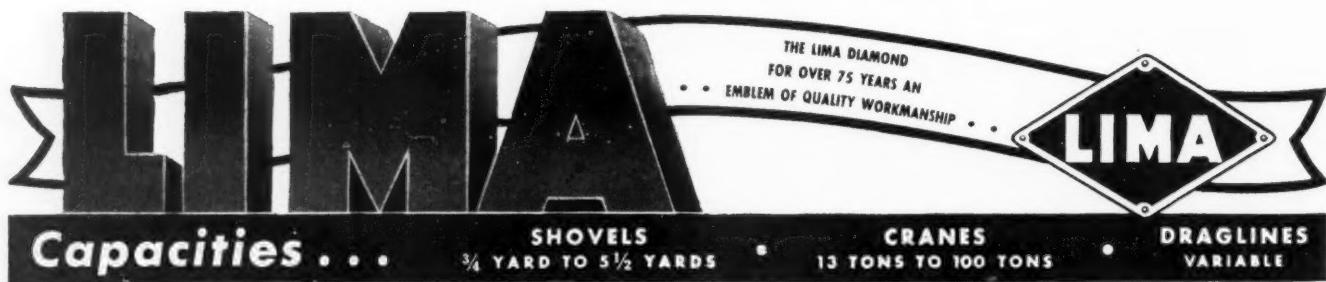
The cab is **FLEXI-MOUNTED**—cushioned on rubber against road shocks, torsion and vibration! . . . The seats are fully adjustable, bigger and more comfortable. **LONGER WHEELBASES** give better load distribution.



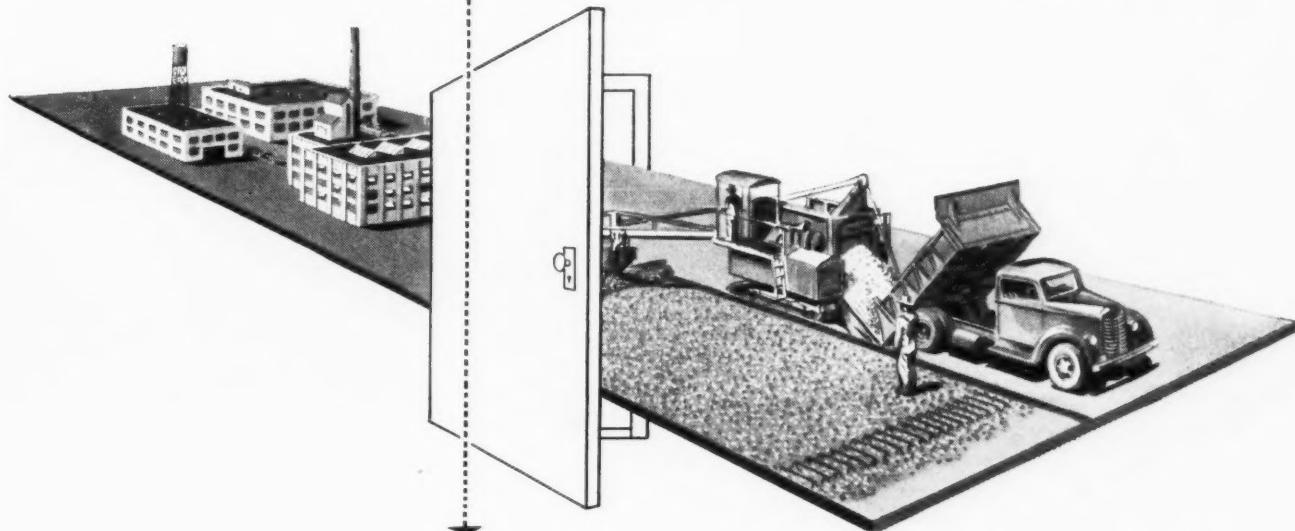
Most dragline work requires the spoil be cast as far back from the cut as possible. Long Booms for such a purpose mean only extra weight if the dragline isn't capable of handling a long boom and load at a low angle. Working range does not depend so much on the length of the boom as it does on the angle at which the boom can be worked without tipping the machine. The accompanying sketch illustrates a comparison in working radii of a well balanced LIMA dragline equipped

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BY ASSURING QUICK, economical delivery of essential construction items when needed, the distributor, in effect, places America's factories "next door" to every job site.

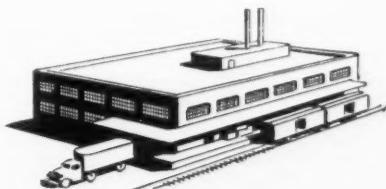
Here's how distributors are accomplishing this complex job of supply with maximum economy for construction men in their territory . . .

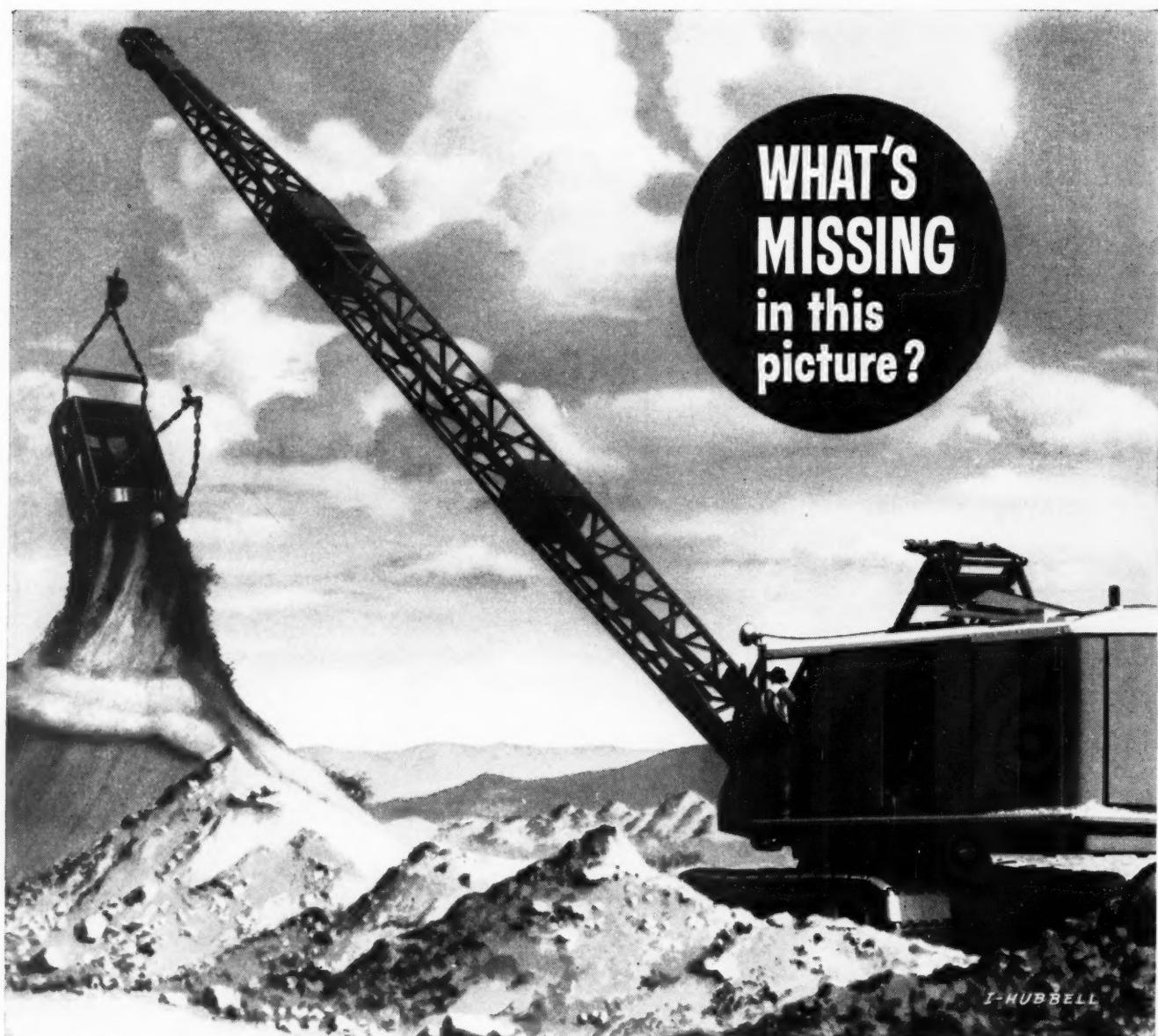
- Distributors maintain warehouses and yards central to construction activity as convenient, well-stocked assembly points for thousands of essential construction items. Distributors' central stocks of equipment, tools, materials, and supplies free contractors from the necessity of building cumbersome and costly stock piles at the job site.
- Distributors anticipate routine as well as emergency needs of construction men in their territory. Expensive time lags involved in ordering and obtaining delivery of products from distant, scattered sources are eliminated.
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- Distributors facilitate procurement of hard-to-find items through their intimate knowledge of sources of supply.
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No. 3 in a series of advertisements sponsored by ENGINEERING NEWS-RECORD and CONSTRUCTION METHODS showing how distributor services aid economical construction





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Adnun Black Top Pavers have proved themselves on County work. They bring a combination of advantages that can't be found in any other black top paver on the market. These advantages mean faster laying, smoother pavement and less time cost in moving from one part of the job to another. Check these advantages before you buy and be sure you are getting the most for your money.

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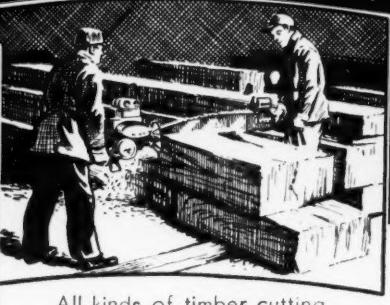
FASTEST CUTTING, MOST RUGGEDLY BUILT CHAIN SAWS ever made



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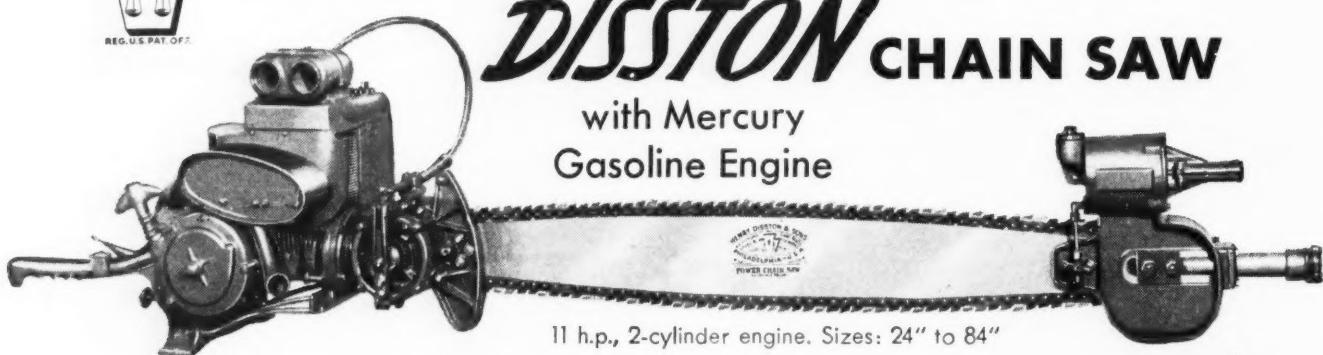
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11 h.p., 2-cylinder engine. Sizes: 24" to 84"

For fast, dependable performance—in timber cutting of every kind—the Disston Chain Saw is outstanding. It's a portable, easy-to-operate, two-man, self-contained unit for use in forests and parks; on tree service, railroad and contracting work; at shipyards and manufacturing plants—wherever there are trees to fell and buck or timbers to cut.

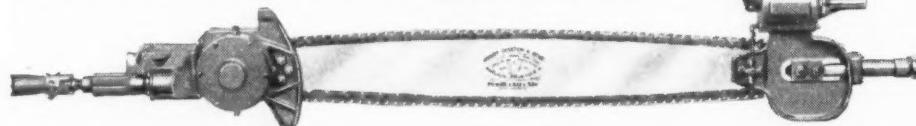
The Disston Chain Saw is built for long, hard service and low cost operation. It delivers

more horsepower per pound of weight, and is manually controlled to utilize full engine power under all cutting conditions.

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3½ and 5 h.p. motors in 24" and 36" sizes. The 3½ h.p. motor requires 90 cu. ft. of air per min.; the 5 h.p., 150 cu. ft. per min. Each operates at 90 p.s.i.



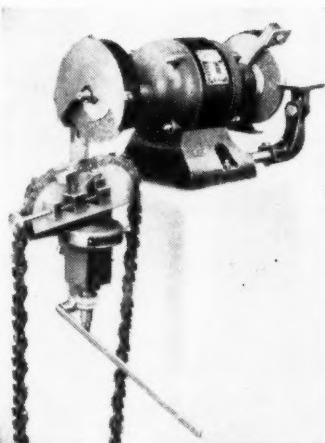
A powerful, light weight, air-driven saw that can be operated wherever compressed air is available—even under water or where explosive vapors are present. Many are in use by railroads, contractors, shipyards, utilities and industries of various kinds. It is ruggedly built, well balanced and easy to operate from any cutting

position and on woods of every kind. Equipped with heavy-duty, vane-type motor, specially engineered and produced by Chicago Pneumatic Tool Company for use on Disston Chain Saws. Requires little maintenance as it is built for long, economical service.

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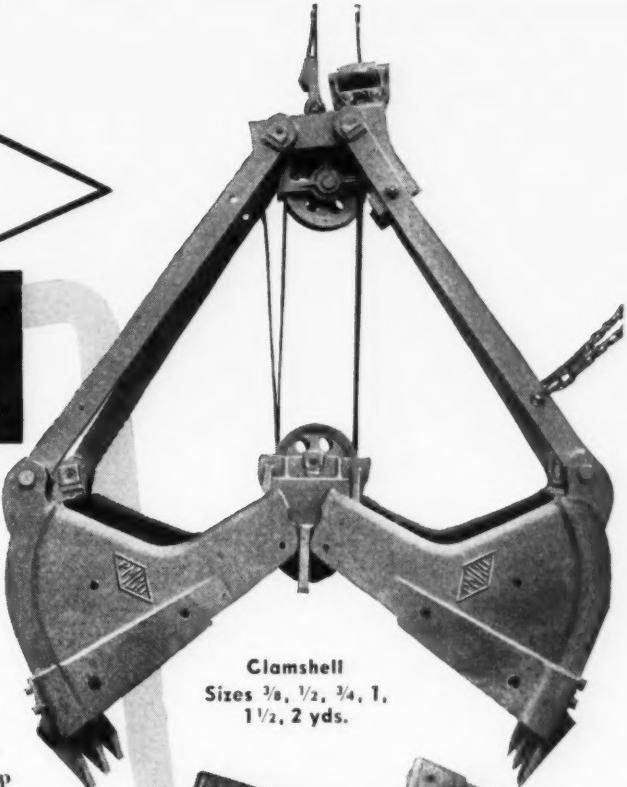
• FRONTS, BOTTOMS, SCOOPS AND TEETH are 14% manganese steel developing tensile strength up to 120,000 p.s.i. This high percentage manganese steel gives tough, rugged strength for hard service and allows wide set corner teeth for easy entrance in digging. Volume production methods enable us to build a better bucket with amazing economies in manufacturing.

On the $\frac{1}{2}$ yd. and $\frac{3}{4}$ yd. shovel, Pullshovel Bucket and Dragline Buckets, all teeth are interchangeable — a great advantage to operators.

Experience Counts

See your shovel man or equipment dealer about PMCO Buckets and Dippers.

Clamshell
Sizes $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1,
 $1\frac{1}{2}$, 2 yds.



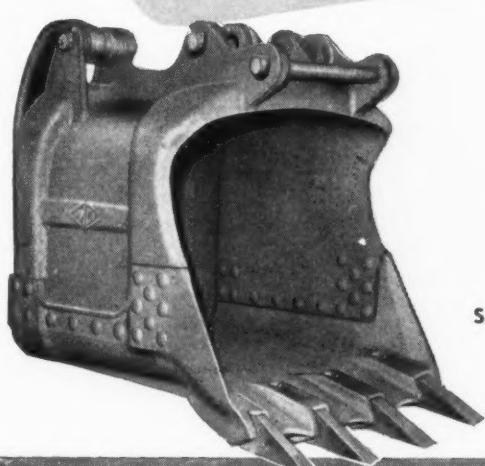
**Pullshovel
Outside Cutter
Widths
26"—31"—36"—
39"**



**Dragline
All Purpose and perforated
Sizes $\frac{1}{2}$ to 2 yds.
Stripping sizes 2 to 9 yds.**



Shovel
Sizes $\frac{3}{8}$ to 18 yds.



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GOOD YEAR

MORE YARDS ARE MOVED ON GOODYEAR OFF-THE-ROAD TIRES THAN ON ANY OTHER KIND

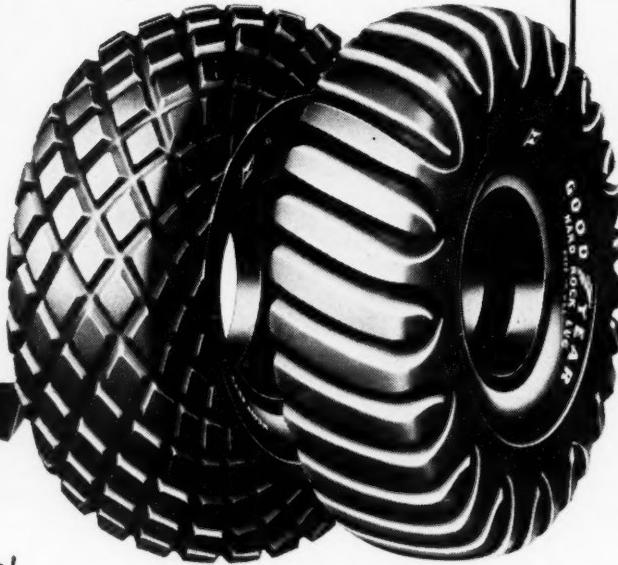
STUDY the tread of the Goodyear Sure-Grip and you can see why it stands alone as the super-traction tire for drive wheels. The self-cleaning open center tread design makes each lug a *separate* traction cleat. So *each* lug bites in fully, takes firm grip with minimum slip, PULLS sure and steady in *any* going. Fact is, this great giant is so "right" for traction, it's first choice wherever pulling power is the big need — just as every other Goodyear work tire is first choice for its type of service.

The big reason why Goodyears stay first choice is *low-cost, long-life performance on every job*. That's why, year after year, *more yards are moved on Goodyear off-the-road tires than on any other kind!*



ALL-WEATHER
EARTH MOVER
for drawn vehicles and
general traction

HARD ROCK
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for super stamina
in all rock work



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Construction Methods

OCTOBER 1947

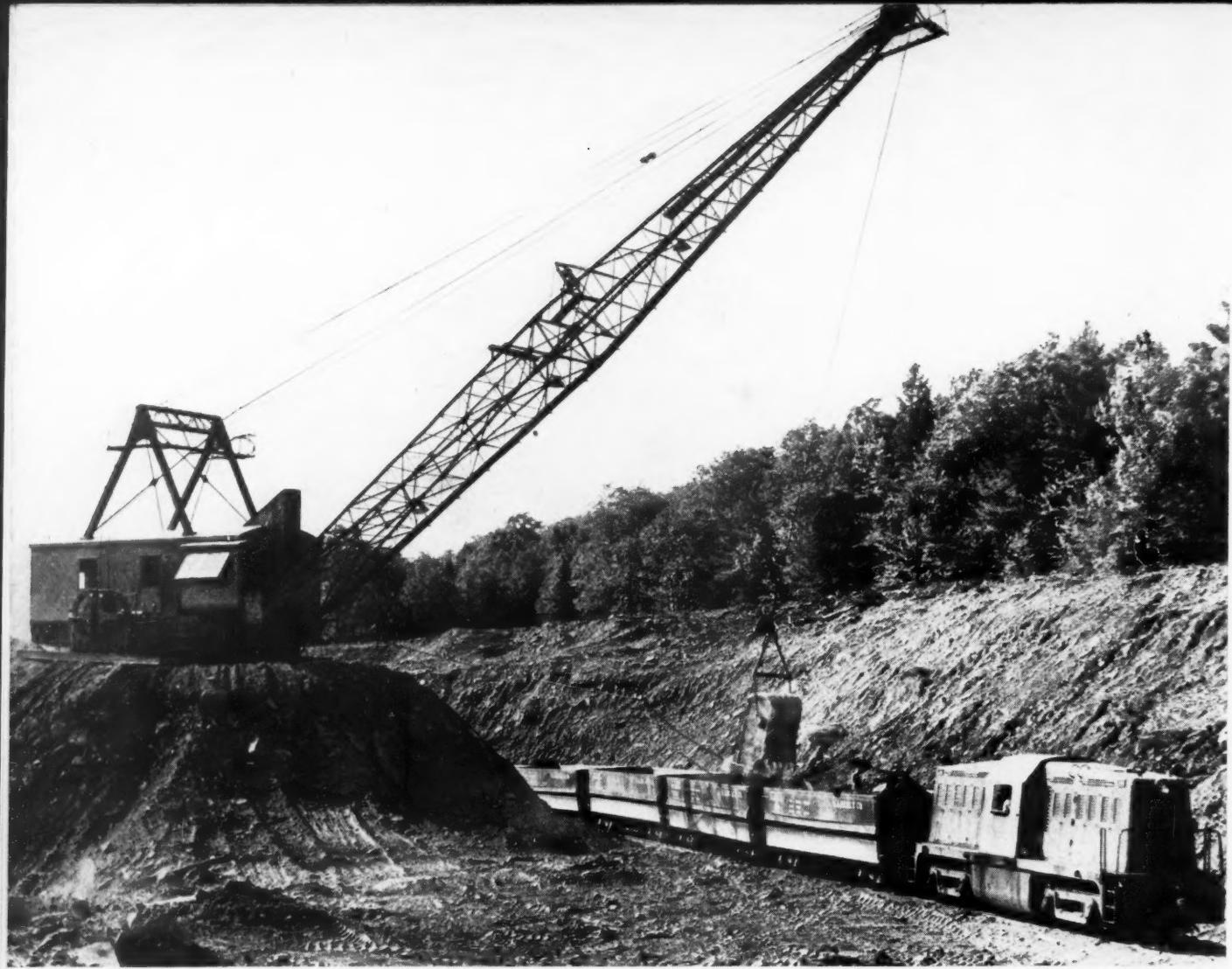


U. S. Bureau of Reclamation P

Rings of Steel for Desert Waterway

HEAVY closely-spaced reinforcing bars outline one of the country's biggest siphons, Dry Coulee No. 1, being built by Utah Const. Co.-Winston Bros Co. on their \$2,800,000 contract for 6½ miles of West Canal on the Columbia Basin project in eastern Washington.

ton for the Bureau of Reclamation. The 25-ft. siphon, big enough to serve as a railroad tunnel, carries the canal for 4,400 ft. across the dry wash. Some day Columbia River waters flowing through the waterway will transform the present desert into fertile farm areas.



Rail haul . . .

Bucyrus-Monaghan 6-yd. walking dragline loads trains of eight 30-yd. standard-gage cars for haul to processing plant at Merriman Dam. Railroad works only on night shift.

Railroad and Wagons Split

RAILROAD HAULING—Once a popular method of earthmoving—has been revived by S. A. Healy Co. in building Merriman Dam, largest rolled-fill dam in the East. Healy bought the rail equipment, five 65-ton locomotives and 40 standard-gage 30-yd. dump cars, upon award of the contract last year as a hedge against possible inability to obtain sufficient truck and wagon hauling units. By now, however, he has a fleet of 120 Euclid wagons, including ten of the new 24-yd. size.

Yet the railroad haul has proved so economical that current operations include all-wagon haul by

day and a combination of rail and wagon transportation for the night shift, a set-up that has produced as much as 22,000 cu.yd. in two 10-hr. shifts. Next year he intends to extend operations to full time use of both railroad and wagons that should turn out 35,000 cu.yd. per day.

Merriman Dam is being built by the Board of Water Supply, New York City, as a major storage project in the Delaware Aqueduct system. Located on Rondout Creek at Lackawack, N. Y., it is a 7,000,000-cu.yd. embankment of rolled fill and rock 200 ft. high and 2,500 ft. long at the crest. A

concrete cutoff wall, including caissons sunk through the valley floor to rock, corewall trench excavation, a diversion tunnel and a small amount of embankment were finished under pre-war contracts.

Included in the present contract are 1,500,000 cu.yd. of impervious and 4,100,000 cu.yd. of semi-permeable material in the main dam, 520,000 cu.yd. of refilling excavation areas, 750,000 cu.yd. rock in the toes and slope protection, 55,000 cu.yd. dry rubble masonry slope paving, and 210,000 cu.yd. of sodded slope dressing on the downstream side. Also included are an inclined shaft spillway connection



Wagon haul . . . One of two P&H 3 1/2-yd. electric shovels on job loads Euclid wagons for haul to grizzly plant. These shovels sometimes move into rail-serviced pits at night to assist in car loading.

Merriman Dam Fill Haul

to the diversion tunnel, a spillway channel and extensive outlet control and chlorinating works connecting with the aqueduct tunnel.

Because of a large proportion of cobbles and boulders in the borrow pits—currently running about 15 percent—every yard of rolled-fill material must be processed through a dual rotating grizzly system that scalps out all rock more than 5 in. The grizzly, built by one of the contractors on the earlier work, has been adapted to receive borrow-pit material from both wagons and dump cars.

The scalping plant now in use consists of a dual set of bar griz-

lies, one for wagon discharge, the other for rail haul, with bars set 24 in. apart over two adjacent receiving hoppers. All boulders too big to pass these bars are lifted out by a rock grapple handled by a Lorain truck crane for loading into a standing truck. The railroad set of grizzlies extends over troughs at each end of the hoppers to accommodate a full car length in case one of the hoppers gets plugged up. A tucker hoist-operated scraper clears the trough, pulling material into the hopper.

From each hopper the pit-run material flows uncontrollled on to a 4 1/2x7-ft. Jeffrey vibrating feeder

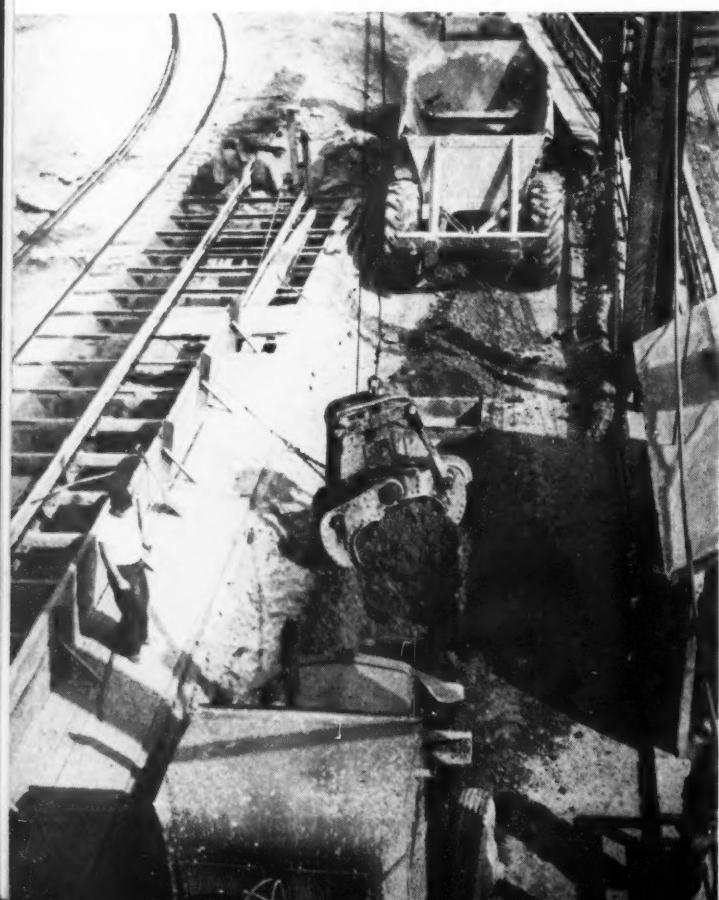
and thence to an 8x30-ft. Allis-Chalmers rotary scalping screen with 5-in. square openings. Air-driven vibrators and air jets are available at the hopper discharge chutes to break up jams. Rock retained in the screens passes on out on to a pair of apron feeders for loading into trucks.

Material passing through the screens drops on to a 60-in. belt for transmission to two big truck-loading hoppers 400 ft. away. This conveyor is unique in that it is driven at the center, instead of at one end, by a 275-hp. motor. All controls for the belt, the two screens and the apron feeders are



ALL DAY-SHIFT HAUL from pits to plant is by Euclid wagons. Two Lima and two P&H diesel shovels work in benched borrow pits above railroad track level. Heavy bank material is loosened by blasting from holes put down by a Bucyrus-Erie well drill.

Mal Gurian Photos



←
PROCESSING PLANT for removing plus 5-in. rock from pit-run material carries two sets of bar grizzlies over dual receiving hoppers. Lane at right, where rock grapple is removing large boulder, is for pit run Euclid wagon haul. Rail dump cars at night discharge from track at extreme left through adjacent grizzly openings.

→
WAGONS dump pit-run material into grizzly hoppers without stopping

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concentrated in a house at top of the processing plant. The feeders have sufficient capacity to be stopped while a loaded truck pulls out and an empty one backs in. Oversize rock is stockpiled, for part of it can be used in the dam, but some will be waste material.

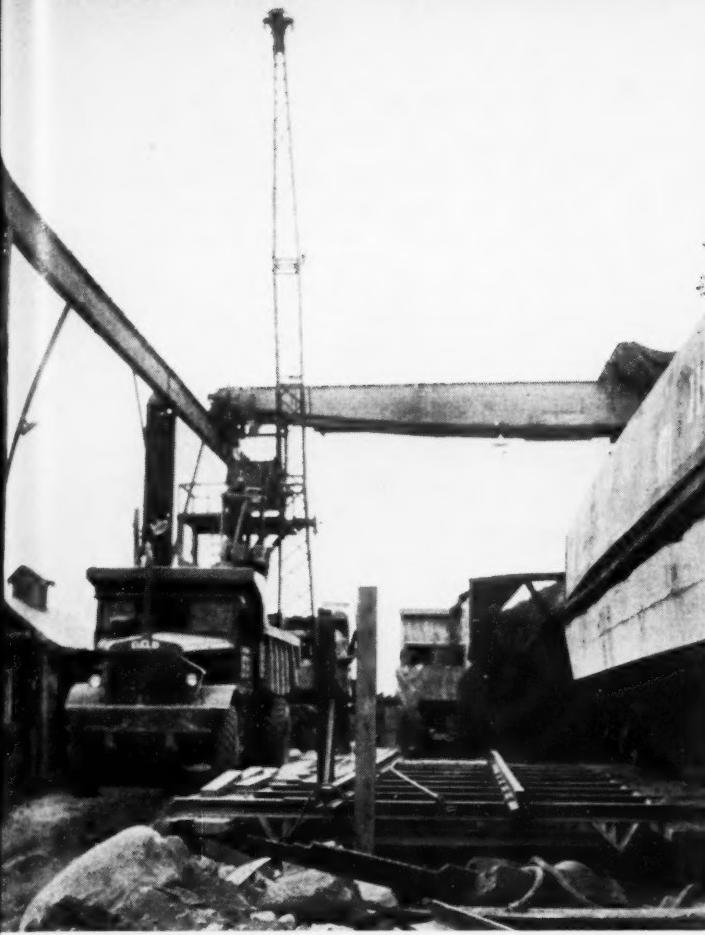
The truck loading bins are equipped with air-operated sliding gates through which Euclid wagons are loaded for transportation of processed fill material to the dam. The discharge chutes are fitted with pneumatic vibrators to loosen jammed material. These bins and the processing plant are located on the left-hand bank about $\frac{1}{4}$ mi. above the dam axis.

Borrow Pit Operations

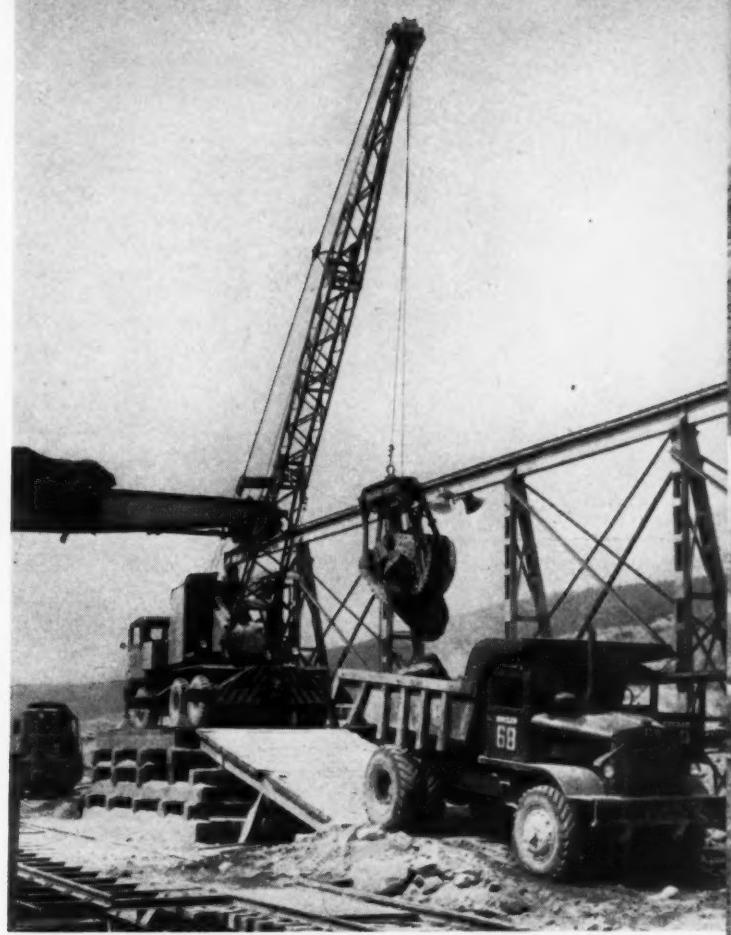
Present borrow pits are strung along the left bank of the valley at various levels from $\frac{3}{4}$ to $1\frac{1}{2}$ mi. above the grizzly plant. Selection of materials for the two classes of embankment is wholly by borrow pit yield. Certain pits yield material suitable for the impervious section of the dam; others containing a higher percentage of gravel are a source for the outer zones of the fill, which constitute about two-thirds of the volume.

Because the impervious center zone requires much more working, compaction and moisture control than do the semi-pervious zones, placement of impervious material is carried on as much as possible during day shifts. Exceptionally wet weather this season has disrupted the normal schedule of shift operations working on pervious and impervious fill sections. Moisture content of the outer





AT END OF DAY SHIFT all haul from pits to plant by wagon is reduced and railroad cars go into operation. Here 30 yd. of material drops from car through grizzly bars. Truck at left is for oversize boulders loaded by crane in background.



DURING BOTH SHIFTS Lorain truck crane equipped with rock grapple and set on timber crib platform loads oversize rock into waiting truck. At first boulders were handled by overhead traveling crane, but this arrangement proved too slow.

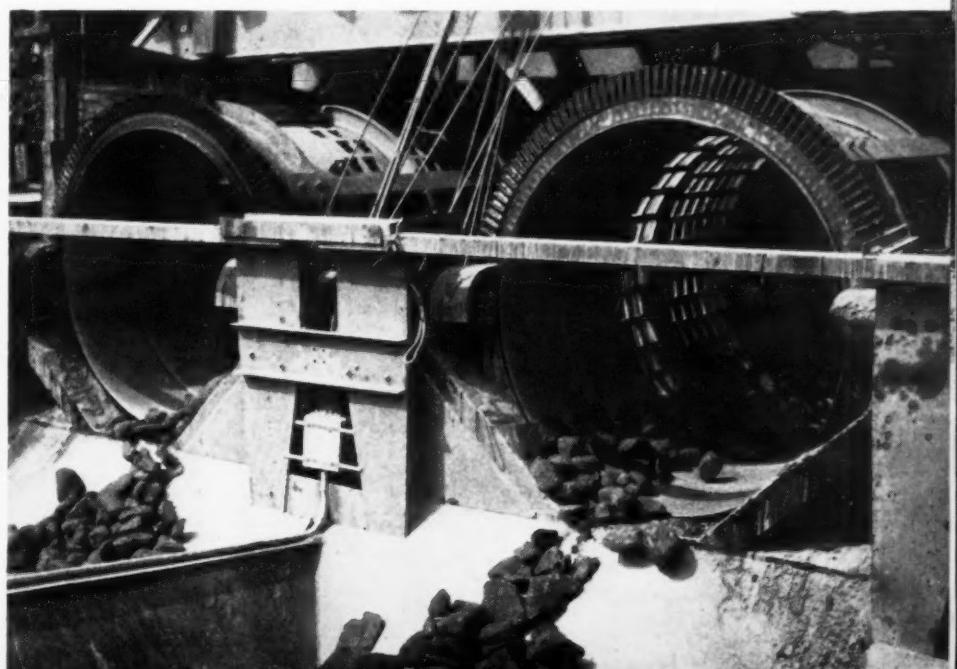
zones is not so important, and those sections can be filled when weather conditions prohibit impervious fill being placed.

All loading in the borrow pit is by shovel or dragline, and all haul to the grizzly plant is by 13-yd. Euclid wagons and the railroad. In the pits are a Bucyrus-Monaghan 6-yd. walking dragline, two P&H 3½-yd. electric shovels, two P&H 3-yd. diesel shovels and two Lima 3½-yd. diesel shovels. All units except the walking dragline are moved to pits yielding desired material for the shift. The big walking dragline is kept solely for railroad loading, so works only at night. The two electric shovels are used for both rail and wagon loading, while the diesel shovels

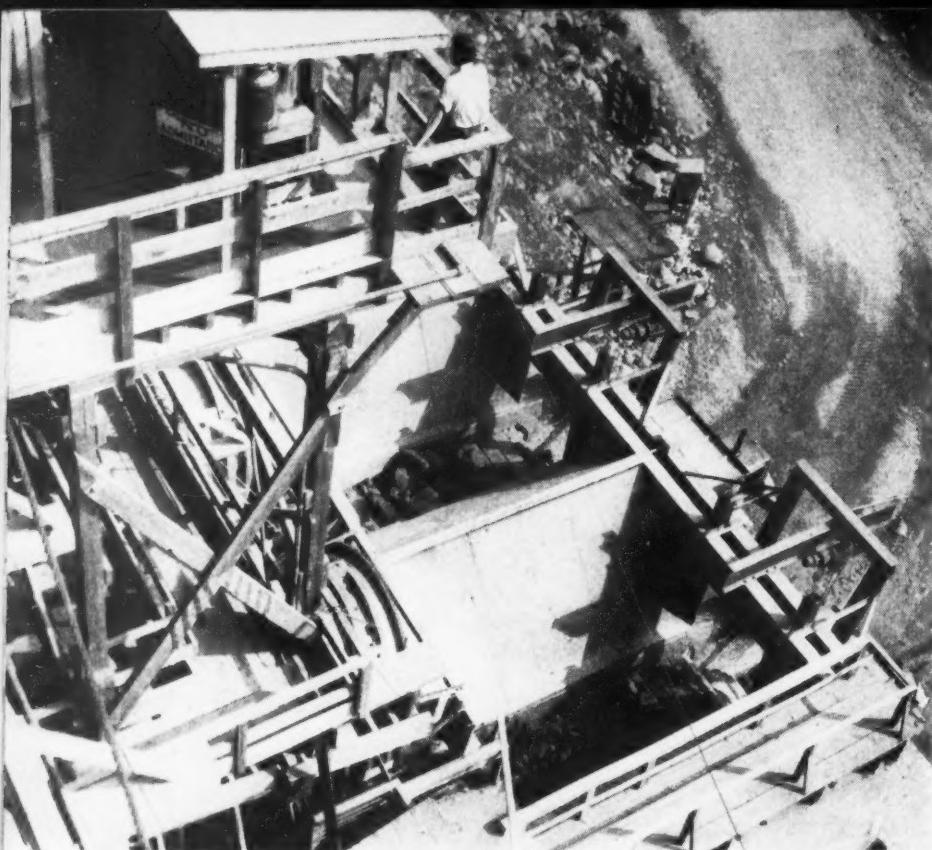
in general stick to wagon loading. A Bucyrus 54B and a Northwest 80D dragline, now doing miscellaneous and abutment stripping work, will be converted to shovels to step up the daily output to 20,000 cu.yd. for two 10-hr. shifts.

The railroad haul, at night only, is by five trains of eight 30-yd.

cars each, pulled by 65-ton Whitcomb diesel locomotives, obtained from war surplus, each still carrying an ETO serial number. Dump cars are loaded by the big walking dragline and by the electric shovels, and are eased down a 1½ percent grade to the grizzly plant. Euclid wagons are loaded



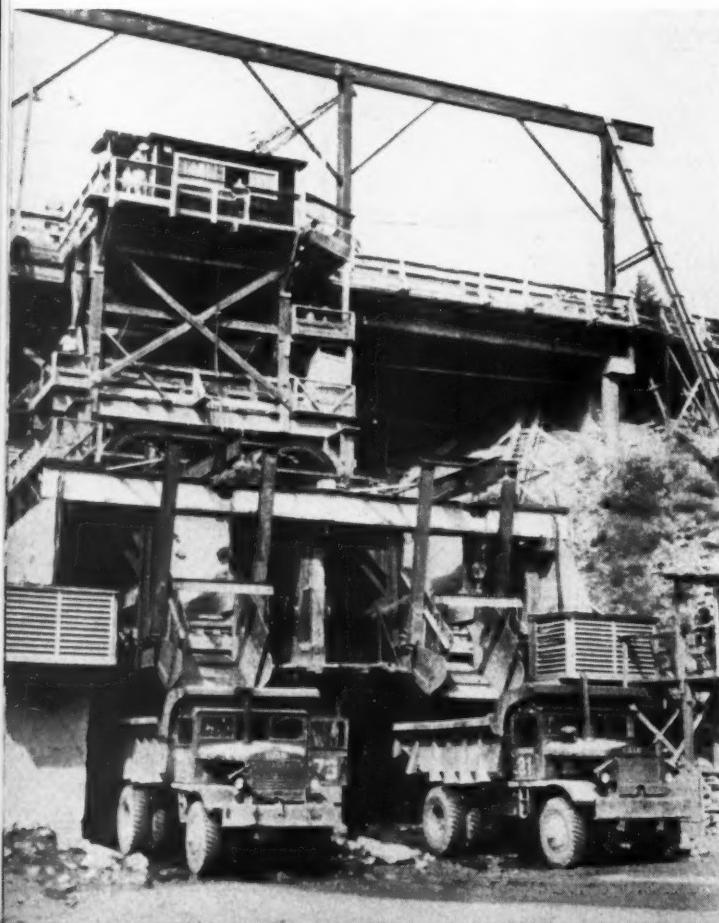
FROM RECEIVING HOPPERS at processing plant material passes over vibrating feeders into two rotary scalping screens. Stones 5 in. and over roll on to apron feeds for truck loading. Material passes through screens drops on to 60-in. belt conveyor for transportation to truck loading bins.



APRON FEEDS, set below rotary scalping screens, serve as both storage hoppers and loaders for rock retained on screens. Feeds are operated by remote control from station on top of plant.

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PROCESSING PLANT (below) is operated from central control house set at grizzly deck level, from which location operator can watch scalping screens in center and apron feeders loading stone into trucks at lower level. Belt conveyor leading to truck loading bins runs through tunnel in bank at right.



AFTER 400-FT. RIDE over 60-in. inclined belt conveyor, processed material for embankment fill is dumped into two big bins (below) for loading into Euclid wagons for haul to fill. Bins are equipped with air-operated sliding gates. Receiver tank at left side of bins stores air for gates and vibrators for loosening jams.



at various pits and roll down to the processing plant over devious haul roads, some of them pretty steep. Except when carrying large rock, the wagons dump over the grizzly without stopping. Small crane cherry pickers equipped with rock grapples are also stationed in the pits to pick out big rocks whenever possible. Wagon haul from pits to plant is reduced at night to compensate for the additional rail haul.

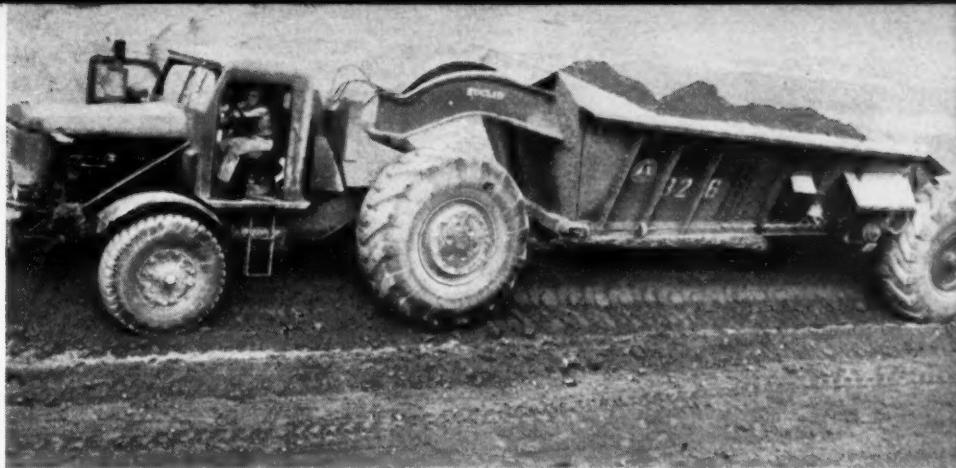
Embankment Placing

Fill haul from the grizzly plant storage bins to the embankment is by Euclid wagons, including ten of the new 24-yd. size. Material is dumped in windrows parallel to the dam axis, and is spread into 7-in. layers in the impervious zone, 8-in. layers elsewhere by Caterpillar tractor bulldozer or the new 4-wheel LeTourneau bulldozers. Specifications require a minimum of 14 and 8 passes of sheepfoot rollers for the two respective zones.

Moisture control on the fill is

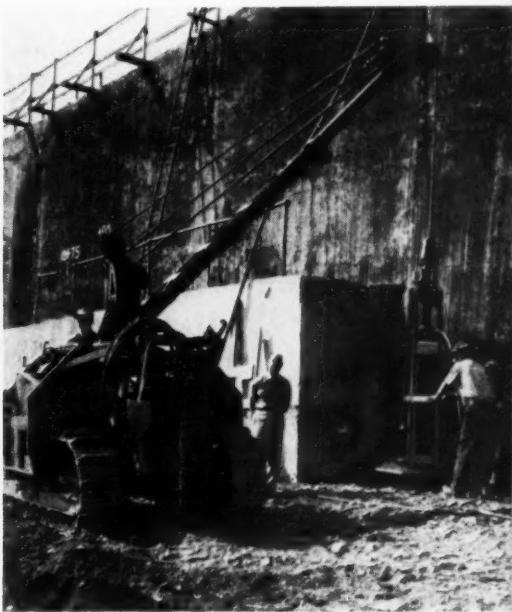
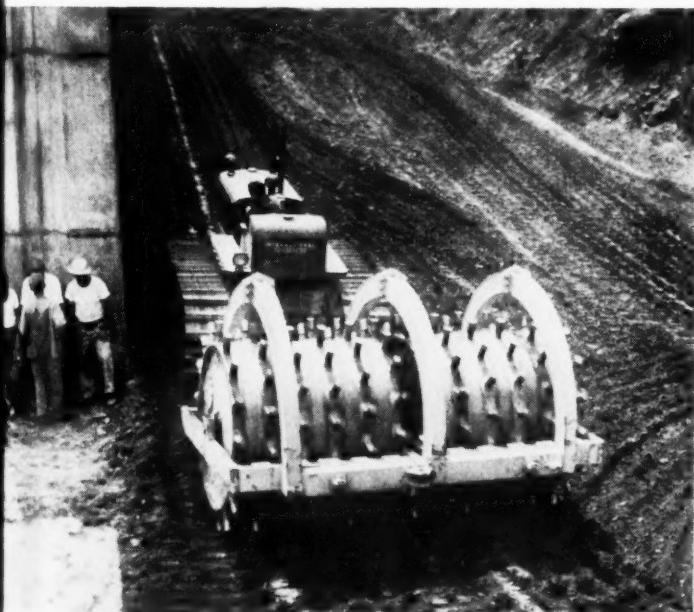
At dam, material is dumped . . .

Haul from plant to fill is by Euclid wagons, including new 24-yd. rigs shown here, which dump in longitudinal windrows.



Spread by bulldozers . . .

Both new LeTourneau 4-wheel and Caterpillar bulldozers spread windrows into 7-in. layers ready for compaction. Caterpillar rigs are also equipped with trailing scarifiers.



Compacted by rollers and tampers . . .

Minimum of 14 passes with Southwest sheepfoot rollers is required for impervious fill section. Rollers, some arranged in tandem, are pulled by International and Allis-Chalmers tractors. Narrow sideframes permit rollers to work close to corewall, though sometimes additional compaction close to wall is by drop-hammer arrangement on tractor crane or Barco gasoline hammer.

Tamper Photos by Wm. Standfast, BWS



TOO-WET MATERIAL in impervious fill must be aerated for drying. Here Rome disk gang plows do trick pulled by prime mover from Euclid rig.



stringent, and this season the usual procedure is disking and scarifying for evaporation of excess moisture rather than customary sprinkling to increase the moisture content. Motor graders occasionally help shape up the embankment when not busy on haul roads.

ROLLED CANVAS for protection of fill against rain is being spread by specially-equipped bulldozer. Contractor has 275,000 sq. ft. of canvas available for this purpose.
Photo by Wm. Standfast, BWS

Wet weather can tie up placing of fill in the impervious zone for several days, for the embankment dries out slowly. To lessen absorption of rain by the fill, the contractor flat rolls the impervious zone at end of the day shift to help shed the night rains and thus enable filling to be resumed the next day. Also he has available 275,000 sq. ft. of canvas that can be quickly spread over the fill when rain threatens.

The canvas is in 25x175-ft. strips that are folded to 10-ft. width and then rolled up around a pole axis for moving. Rolls are hung on a special attachment on a bulldozer for spreading over the fill.

The new Delaware water system is being developed by the Board of Water Supply of the City of New York, Irving V. A. Huie, President, Henry Hesterberg and Rufus E. McGahen, Commissioners. Roger W. Armstrong is Chief Engineer and John M. Fitzgerald is Deputy Chief.

The Merriman Dam comes under the responsibility of Victor C. Brownson, Department Engineer, with Chas. D. Horner as Division Engineer in direct charge, assisted by George Spann.

For S. A. Healy Co., Chicago, Richard T. Hill, Jr. is Eastern Vice-President and L. L. Lauver is general superintendent.

HAULING AND COMPACTION UNITS are dwarfed by huge expanse of fill as seen (below) from top of right abutment corewall. Sections close to center wall have been flat rolled to shed rainwater. Canvas strips for keeping fill dry are being spread out at left.
Mal Gurian Photo



*Cited
for
Service*



FREDERIC L. COPELAND

BECAUSE a young tunnel surveyor long ago turned the wrong angle on the Chicago Freight Tunnels the engineering profession was deprived of a great character and contracting gained one. When the headings met way off line because of his blunder, young Frederic L. Copeland left tunneling in a hurry "for the good of the service."

He persisted briefly in surveying by joining the Indiana Harbor R.R., at Danville, Ill., but soon came a cropper by laying out a bridge wing wall according to right-of-way stakes instead of abutment stakes. Wing walls parallel to stream flow were such an impractical novelty that Cope was abruptly detached from the payroll, thus ending his engineering career.

The sympathetic contractor on the project, Bates & Rogers Construction Corp., Chicago, took him on as a timekeeper. This was in 1905, and Cope has never left B&R, and has served as vice-president and director of the firm since 1925. Just a few weeks ago he became resident manager of their new San Francisco office.

Probably his mother called him Frederic, but to all others he has always been just plain Cope. He started out in life at Harrisburg, Pa., July 29, 1883. His record is blank from that date to June, 1903, when he stepped out of Sheffield College at Yale University with a brand new civil engineering diploma. The 20-year-old engineer struck out for Mexico and became

a surveyor on the new Mexico International R.R., out of Durango. This job ended when the locators found themselves high in the mountains with no way out, so the project was abandoned. The brief Chicago tunnel and railroad jobs came next.

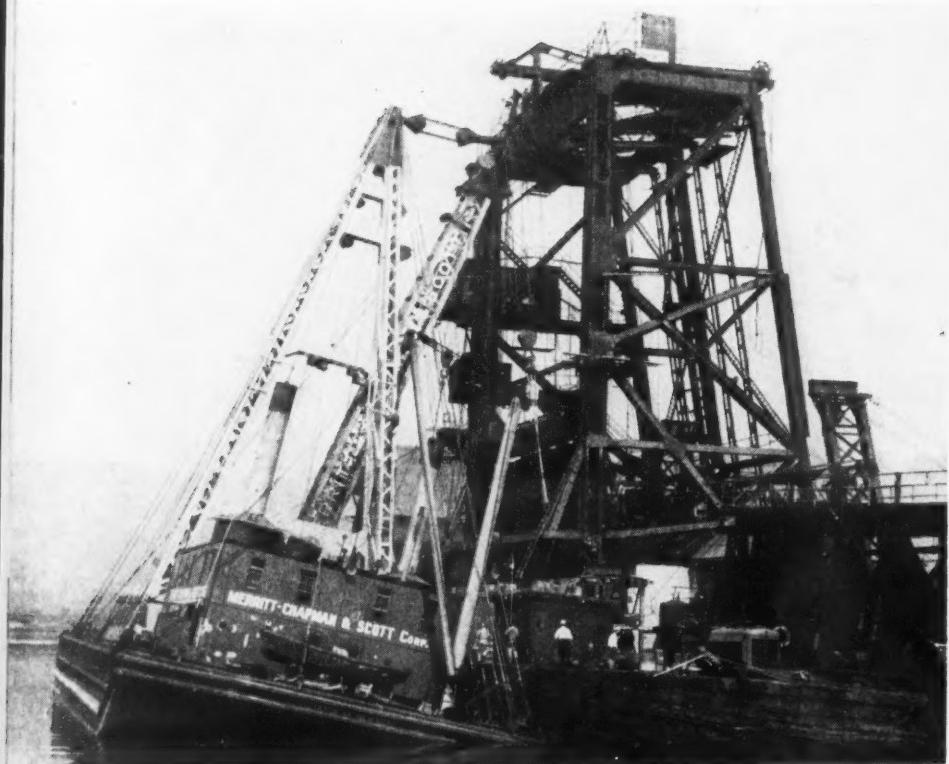
In 1907 Cope went to Spokane for 10 years as superintendent on pioneer railroad construction throughout the northwest. He built Camp Grant near Rockford, Ill., largest of all World War I camps, then went to Philadelphia to supervise construction of the famous Hog Island Shipyard. Between wars he directed building of scores of large projects, including railroads, tunnels, bridges, dams, power plants and industrial works. One outstanding job was paving both decks of the San Francisco Bay Bridge.

During the last war he was project manager for the \$43,000,000 Kingsburg Ordnance Plant in Indiana, where he installed radio communication between the office and supervisors' cars to speed up operations. He regards this project as the best job of his illustrious career. After Kingsburg the 27-

million-dollar Oak Ordnance Plant at Decatur, Ill., was just a breeze for him. A change of pace found him in charge of building most of the permanent bridges on the Alaska Highway.

Cope has all those lovable qualities that endear a man to his friends. He has the skill and integrity of a leading contractor that win him the respect of clients and associates alike. Yet he is a man without counterpart in the construction world. Shrewd, keen and aggressive, he is a top-notch construction man full of drive, ambition and ideas that meet any contracting problem. His blustery, noisy manner unsuccessfully hides a soft heart and an intense desire to be fair and liberal. He is unbeatable in an argument or on a golf course, where he literally talks his opponents out of strokes. When he really gets warmed up, long distance circuits are superfluous, for you can hear him for miles.

God made only one Frederic L. Copeland. Perhaps that is all the world can stand. But He made a great construction man while He was at it.

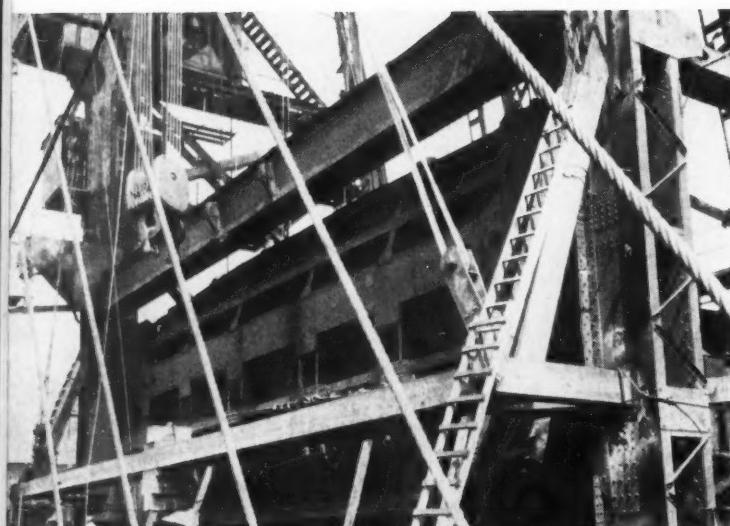


WITH LEE RAIL AWASH under heavy load, 250-ton derrick boat "Monarch" lifts front of 225-ton coal dumper to reset it 15-ft. higher on Edgewater, N. J., pier. Projecting above runoff trestle is one of two 150-ton gallows frames that lift rear legs.



SIDE FALLS of floating rig are hooked to lifting beam on dumper through double 2-in. steel cable slings and heavy pin plates. Side falls make the lift; main block is idle.

Land and Floating Derricks Give Coal Dumper Quick Lift



LIFT ASSEMBLY welded to front dumper legs projects beyond structure to keep derrick boom clear of tower. Spreader beam is two 14-in. 73-lb. H-sections welded side by side and trussed top and bottom with oak blocks and cables.

WITH CLOSE TEAMWORK between heavy land and water equipment, Merritt-Chapman & Scott Corp., New York City contractors, raised a 225-ton coal dumper 15 ft. in 10 hr. at a Hudson River pier of the New York, Susquehanna & Western Railroad at Edgewater, N. J. Two 150-ton gallows frames and a 250-ton derrick boat joined forces to lift the huge structure, 62x50 ft. in plan and 86 ft. high, which was originally installed for barge loading, and placed it on new foundations giving sufficient freeboard to load coal into Liberty ships for export.

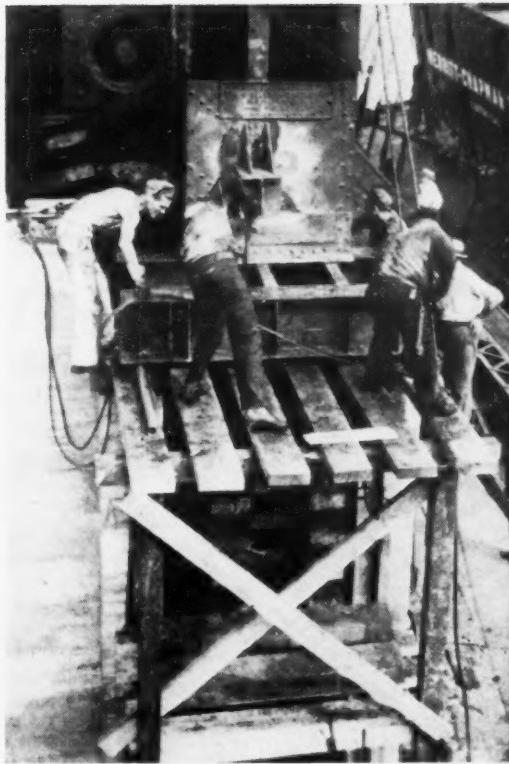
In essence, the plan for lifting the dumper—an old McMyler-In-



TALL GALLOWS FRAMES lift rear corner legs through six-sheave load blocks. Derrick boat furnishes steam to two hoisting engines on pier, each powering one frame. Gallows rest on timber and concrete foundations on lower pier deck and are guyed with six 1-in. cables.



REAR LEG RISES within reinforced concrete corner walls poured as part of new foundation. Oak blocking follows dumper, taken up in 6-in. lifts. Bracket of 2½-in. plates welded to sloping leg is hooked to load block with 8-in. pin.



WITH DUMPER RAISED, beam grillage is skidded beneath leg to span 4-ft. square recess in new foundation within which column was lifted. Bracket at column base is jacking pad to take reaction of hydraulic jacks that helped break dumper loose from old foundations.

terstate—was to: (1) Pour part of the new foundations as 18-in. reinforced concrete walls 13 ft. high around each column, or leg; (2) raise the dumper frame a little more than 15 ft. with gallows frames and floating derrick; (3) bridge between foundation walls at each leg with prefabricated beam grillages 2 ft. thick, and lower the dumper to place on them, and (4) fill beneath the legs and around the grillages with poured concrete to complete the new foundations.

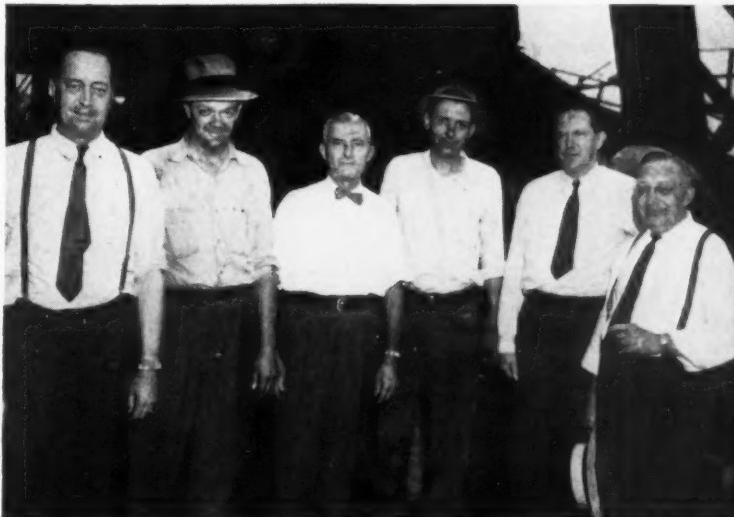
Six weeks was spent in preparing for the actual lift. Counterweights, hopper pan and chute, and approach girders were removed from the dumper, and the tower frame was braced with cables, welded H-beams and latticed channels. Welded foundation grillages were assembled to be slid beneath the dumper legs, when raised, and the new foundation walls were poured.

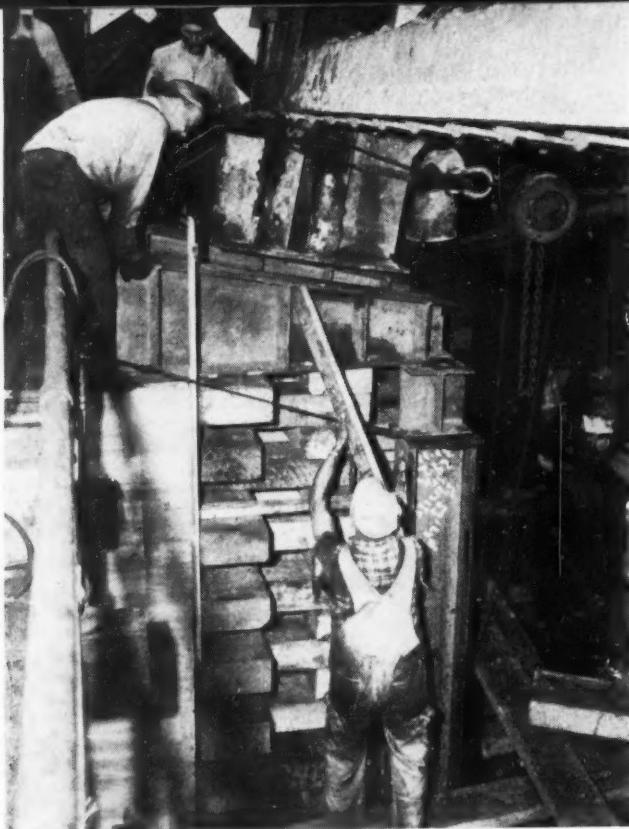
At each of the two front legs, which were plumb, the foundation walls were poured on three sides so as to leave a 4-ft. square recess

in which the leg and attached billet plate were free to move vertically. The fourth side was left open for access and installation of blocking as the tower was lifted. The rear legs of the dumper were battered, and were braced in two planes, so here the walls were

poured only around the outside corners. In addition to their final function as seats for the new grillages, the walls guided the tower as it was raised. To prevent toppling, eight safety cable guys from the tower were run out along the pier and terminated in blocks and

HEAVY LIFTING JOB brings out the contractor's heavy brass. Shown are (l. to r.): JIM DENTON, general superintendent; BURT SANDERS, job superintendent; RALPH DE SIMONE, vice president; JACK GREIG, job engineer; FRED LYFORD, president; AL SIECKE, chief engineer; all of Merritt-Chapman & Scott.





PREFABRICATED SUPPORTS for rear leg rest on foundation wall and beam spanning between other wall and pre-cut steel column. Wrico chain hoist is cabled to dumper leg and opposite foundation for exact alignment of foundation bolt holes.



HANDLING WATER END of Merritt-Chapman & Scott's coal dumper job are (l. to r.): CAPT. GEORGE TOOKER, manager of their Derrick and Inland Salvage Dept.; CAPT. PETE MIKKELSON, master of derrick boat "Monarch"; and BILL KOEHLER, vice president.



falls that were manually tended throughout the lift.

Two 150-ton gallows frames lifted the rear corner legs of the dumper; the 250-ton derrick boat "Monarch" hoisted the front through two side falls from her boom top. To give a wide base for the lift, a combined spreader and lifting beam assembly was welded between the two front tower legs, offset on the water side so that the derrick boom would not foul the dumper superstructure.

The tower was taken up in 6-in. lifts, with floating rig and gallows frames alternately raising front and rear. Precut 6x12-in. oak cribbing was placed beneath the legs as they rose. During the last few feet of the lift, the derrick hoists were dogged and the incoming tide was allowed to raise rig and tower front to avoid too wide an angle between the side falls.

With the dumper raised about

←

DUMPER IS LOWERED to new foundations to complete 15-ft. lift 10 hr. after starting. Dumper was raised to permit loading export coal into ships.

15½ ft., the prepared grillages were slid beneath each leg and fitted over bolts embedded in the foundation walls. At the rear, where there were only two corner walls at each leg, a precast steel column and auxiliary beam were set to carry one end of the grillage. The dumper was then lowered to

exact position, guided by chain hoists and ratchet turnbuckles, only 10 hr. after it was broken loose from its original foundation 15 ft. below. Later, the rest of the foundation was poured and the dumper mechanism reassembled to complete the job.

The work was done by Merritt-

Chapman & Scott Corp. for the Pittston Coal Co., New York City, who have leased the Edgewater coal pier from the Susquehanna railroad. For the contractor, James Denton was general superintendent; Burt Sanders, job superintendent; and Jack Greig, job engineer.

Pull Blade Flattens Ditch Slopes From on Top

A SPECIAL PULL BLADE mounted on extension arms of a Baker bulldozer on an Allis-Chalmers HD10 tractor was developed by U. S. Soil Conservation Service engineers for flattening slopes on existing drainage ditches in the Pocomoke River basin in Maryland and Delaware without working the equipment in the waterways. The moldboard is mounted facing the tractor, so the rig operates in reverse, reaching out with the blade and making the cut as the tractor backs up.

The apparatus is made up of an 8-ft. moldboard from a terracing machine welded to an 18-in. cross-beam. This beam is welded to two 15-in. beam extension bars, 5½ ft. long, bolted to the bulldozer side frames.

All new ditches in the area are being excavated with flat side slopes to reduce erosion and to permit farm equipment to cross the waterways. Old ditches are being flattened for the same purpose. Edward M. Davis, Maryland state conservationist for the U. S. Soil Conservation Service is in charge of the project.



PULL BLADE cuts down slopes of Maryland drainage ditches as tractor backs up. Arrangement of attachment keeps machine out of waterway.

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MOUNTED on extension arms of Baker bulldozer on A.C. HD10 tractor (below), blade can reach out and drag excavated material back up slopes as flattening cuts are made.

IDEA of mounting terracing blade on bulldozer frame extension was brain child of WILLIAM S. OTT, shown below inspecting new attachment which was built under his supervision for \$200.

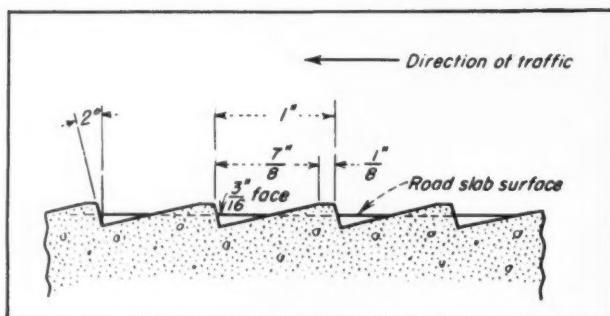


Ribbed White Concrete Markers G



By day . . .

Corrugated lane separators, of scored white concrete, channel traffic to prevent sideswiping. These are most recent of many safety features built into New Jersey highways.



LONGITUDINAL SECTION through surface of white-topped reflecting lane markers shows corrugation details. When poured, white cement mortar is struck at road slab elevation; then scoring tool redistributes it above and below pavement level.

SUPER SAFETY was built right into the pavement on New Jersey's heavily traveled Route 6 near Totowa where a stretch of dual highway with twin 40-ft., 3-lane concrete roadways has recently been completed. Not only is opposing traffic separated by a wide median strip, but the possibility of sideswiping vehicles traveling in the same direction is lessened by corrugated white concrete lane

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1 JOB-BUILT TOOLS (below) screed and roll subgrade for permanent concrete lane markers in 2-ft. space between 12-ft. road slabs. Note continuous recesses cast in slabs to key marker strip into pavement.



2 TRANSIT-MIXED CONCRETE for lane separator base is poured on Kraftex paper (below) to prevent loss of water from mix to porous sand subgrade. Reinforcing mesh will be laid on this 7-in. layer, then covered with additional 2 in. of concrete.



3 WHITE 1-IN. TOPPING (below) follows closely behind 7- and 2-in. base pours to give integral 10-in. slab. Mix is 1:1.75 mortar, of Atlas white cement and light-colored sand, mixed in Koehring Dan-die 4-bag mixer at site.



ers Guide Traffic Day and Night



And by night . . .

Shallow ribs, tooled in marker surface, reflect headlight beams back to car driver and give bright delineation of pavement lanes.

markers poured between, and flush with, adjacent pavement slabs.

Slabs are 10 in. deep and 12 ft. wide, and were poured so as to leave a 2-ft. space between parallel lanes. After road forms were stripped, this 2-ft. space was filled with a 9-in. layer of ordinary concrete topped with 1 in. of Atlas white cement mortar to act as a permanent lane separator, or marker. The white strips were

SPECIALISTS who put in almost all of New Jersey's white concrete reflecting curb take similar lane marker job in stride. Shown are PETE FRAPPAUL, president of Frapaul Construction Co., Rochelle Park, N. J., subcontractor for work, and TONY PEPE, his superintendent.

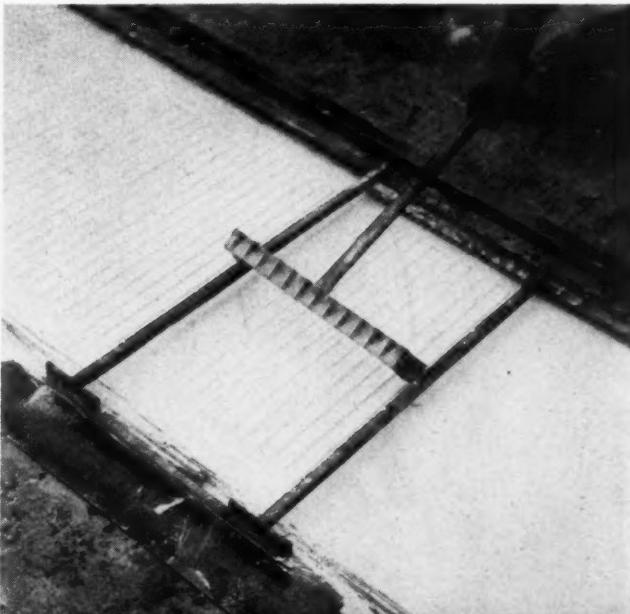


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4 AFTER SCREEDING to road slab grade, surface of white marker (below) is scored to reflect back car headlights, and edges are tooled. Steel plate 6x1-in. angles on each side of strip make smooth surface for easy screeding, and keep white mortar from pavement.



5 SCORING TOOL corrugates surface of marker. Guide frame pinned to spacer bar on far side of strip gives exact depth and location of saw-tooths for efficient light reflection to driver.





6 NOTCHES ARE SHARPENED by free hand scoring without guide frame after mortar has set slightly. This operation requires steady hand, and is secret of fast construction of smooth, accurate corrugations.

scored with a hand tool to make a shallow saw-tooth surface that reflects headlight beams back to the driver, and remains visible under all weather conditions. To a motorist driving over them from one lane to another, the reflecting white separators give a triple warning: by sound (a high-pitched whine from the tires), and by feel (a slight vibration in the steering wheel) as well as by sight.

Construction of the reflecting strip is shown step-by-step in accompanying photographs. The work was done by Frapaul Construction Co., Rochelle Park, N. J., as subcontractor for Geo. M. Brewster & Son, Bogota. The Frapaul firm put in 15,000 lin. ft. of scored divider at the rate of 1,000 ft. per day with a 16-man crew under the direction of Tony Pepe, superintendent.



7 COMPLETED STRIP is sprayed with Ritecure to seal surface, then is kept free of traffic for nine days. Joints at edges will be filled with poured mastic after steel strips are removed.



8 EVEN WHEN WET, corrugations of lane separator are highly visible, but road slab and flat edges of white dividing strip become dark. Water was sloshed on portion of roadway to simulate rain, and pavement illuminated by normal auto headlights.

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9 HEAVY TRAFFIC is safely channeled into lanes by white concrete strips. Markers in left roadway, opened to traffic a year ago, show practically no wear; appear as clean as those in new stretch at right.



Big Draglines Dig Canals

EXCAVATING MAJOR CANALS on the Bureau of Reclamation's Columbia Basin irrigation project is done by large draglines. Shown in the accompanying photos are two of these rigs working on important canals now under construction.

On the Main Canal, J. A. Terteling & Sons, Boise, Idaho, are excavating rock with a Bucyrus 9W walking dragline handling a 12-cu.yd. bucket. When on dirt work, a 20-yd. bucket can be used, according to the contractor.

The Terteling contract for construction of 5½ mi. of canal under two schedules involves rock excavation totaling more than 1,800,000 cu.yd. The Main Canal, more than half of which will be unlined, will have a capacity of 13,200 sec.-ft., has a maximum cut of 90 ft. and a maximum water depth of 36 ft. Bottom width is 50 ft.

By working north on a berm on one side of the canal and south on the other side, this dragline excavates almost all the material required. Material is disposed by sidecasting, with a berm 20 ft. wide required between the canal and spoil bank.

East Low Canal

The East Low Canal is much smaller, being some 76 ft. wide at the surface and 20 ft. wide at the bottom for the portions that are to be lined. The contractor, Winston Bros. and Utah Construction Co., are handling the excavation with Marion crawler dragline with a 6-yd. bucket. The rig is stationed on the center line of the unexcavated canal and moves backward as it digs. A pole line to bring in electrical supply is required for this dragline which



BUCYRUS WALKING DRAGLINE excavates big Main Canal of Columbia Basin project from the banks, sidecasting material beyond the 20-ft. berm limits.

means that, in the relatively undeveloped eastern Washington country, many miles of line must be stretched. When moving 10 mi. from one job to another recently under its own power, a line was strung as the crane moved along its route.

Eugene C. Williams is superin-

tendent for Terteling on the Main Canal work and E. J. Niemen is resident engineer for the Bureau of Reclamation. On the East Low Canal construction, Geo. Mann is project manager and Roy Harer is general superintendent for Winston-Utah and W. W. Brenner is resident engineer for the bureau.



ON EAST LOW CANAL, contractor is using an electric Marion dragline with a 6-yd. bucket, backing up on center line of the ditch.

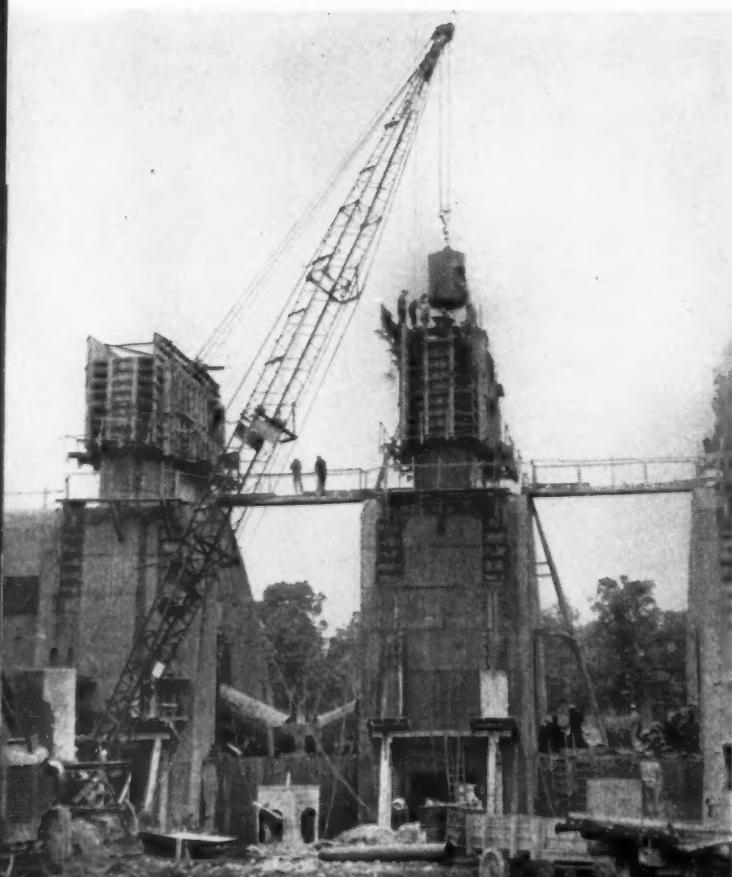


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PILES AND CONCRETE CAPS are driven for 17-story, 1,000-bed Veterans Hospital adjacent to Fort Hamilton Reservation, Brooklyn, N. Y. Cauldwell-Wingate Co., of New York City, has \$14,700,000 contract. Project, which will cover 383 acres, is under direction of Col. W. F. Heavey, District Engineer, New York District, Corps of Engineers.



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SPILLWAY EROSION at Krishnarajasaqara Dam across Cauvery River in India is met by extending new face 200 ft. out from dam's toe. Soft rock is being excavated and spillway brought up to 3½ ft. less than grade with random rubble in mortar and then faced with rough dressed granite blocks, 3½ ft. by 10x10 in., set on end in concrete.

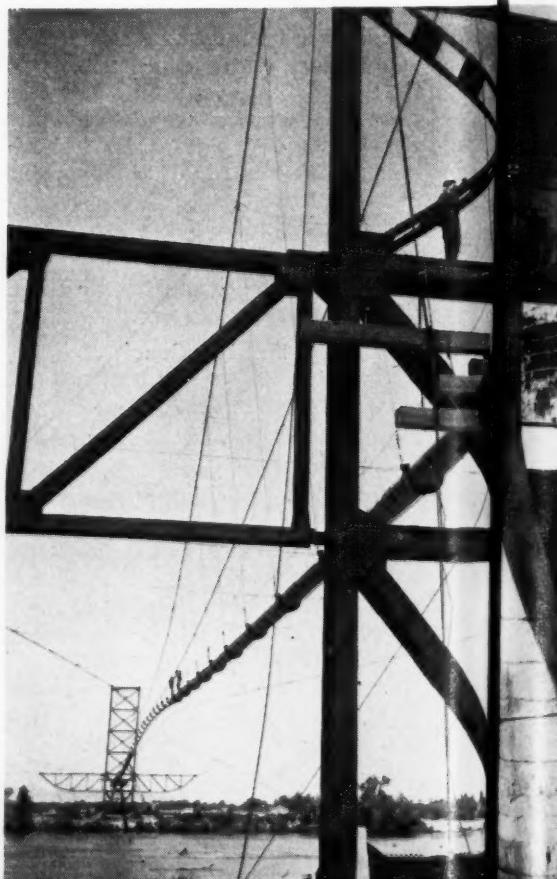
Photo, McGraw-Hill World News



HIGH OVER COLORADO RIVER workmen guide sections of "biggest inch" pipeline (below) which will bring natural gas from Texas to Los Angeles. The 60-ft. sections were shoved out into spidery cable network suspended between two 116-ft. towers, 1,020 ft. apart on either bank of river. This 1,200-mi. pipeline, costing \$60,000,000, will start delivery in October.

↓ Wide World Photo

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CONTROL GATE PIERS are topped out at Delaware Dam in Ohio, with \$4,000,000 project now 65 percent completed. Joint contractors are Johnson, Drake & Piper, of New York; S. J. Groves & Sons, of Minneapolis, and Bowen & McLaughlin, of Phoenix, Ariz.



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WOLF CREEK DAM, on which construction was halted by war, is now scheduled for completion in December, 1949. Working in conjunction with Army Corps of Engineers on this Kentucky flood control project are Jones-Wright Construction Co., Columbus, Ga., and J. A. Jones, Charlotte, N. C. Dam will be 6,000 ft. long, with 1,200-ft. masonry section, and will reach height of 210 ft. Twelve Euclid bottom-dump trucks, equipped with Goodyear tires, haul 15,000 cu. yd. of sandy clay daily loaded by Euclid loader.

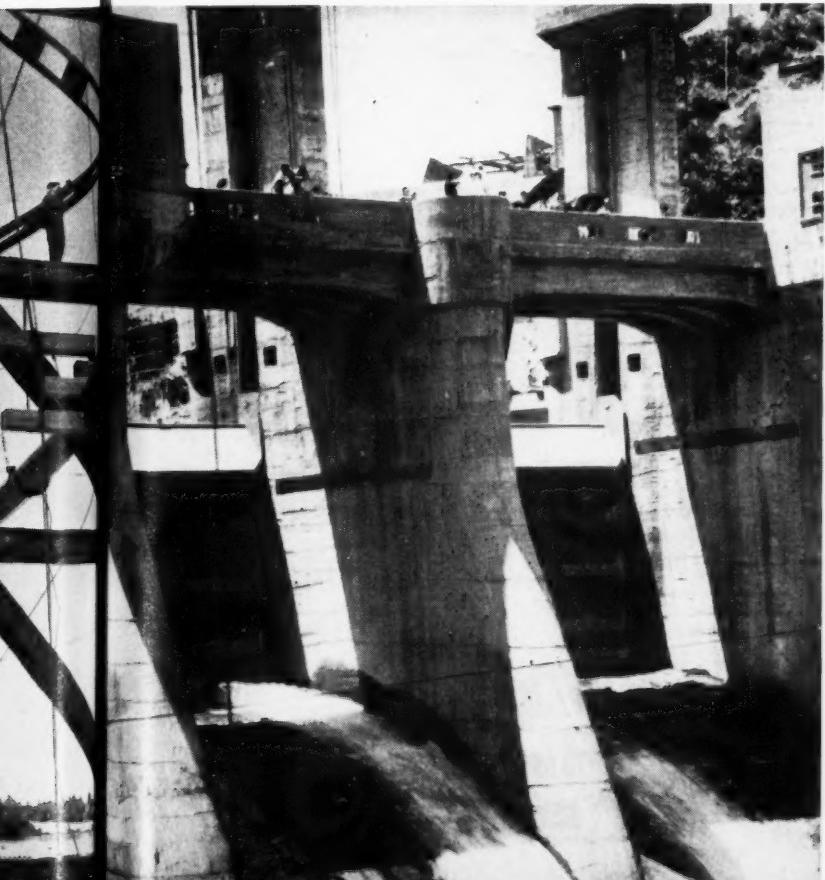
MOVABLE FORMS, largest of this type ever used in Pacific Northwest, have been assembled on Bureau of Reclamation's Columbia Basin project in eastern Washington to speed building of 25-ft. siphon to carry irrigated water. Assembly, costing \$57,000, includes two telescoping inside sections and outside truss-supported unit. Form oil is castor oil mixed with kerosene. Winston Bros. Company and Utah Construction Co. are using these forms on their \$3,871,796 West Canal project.

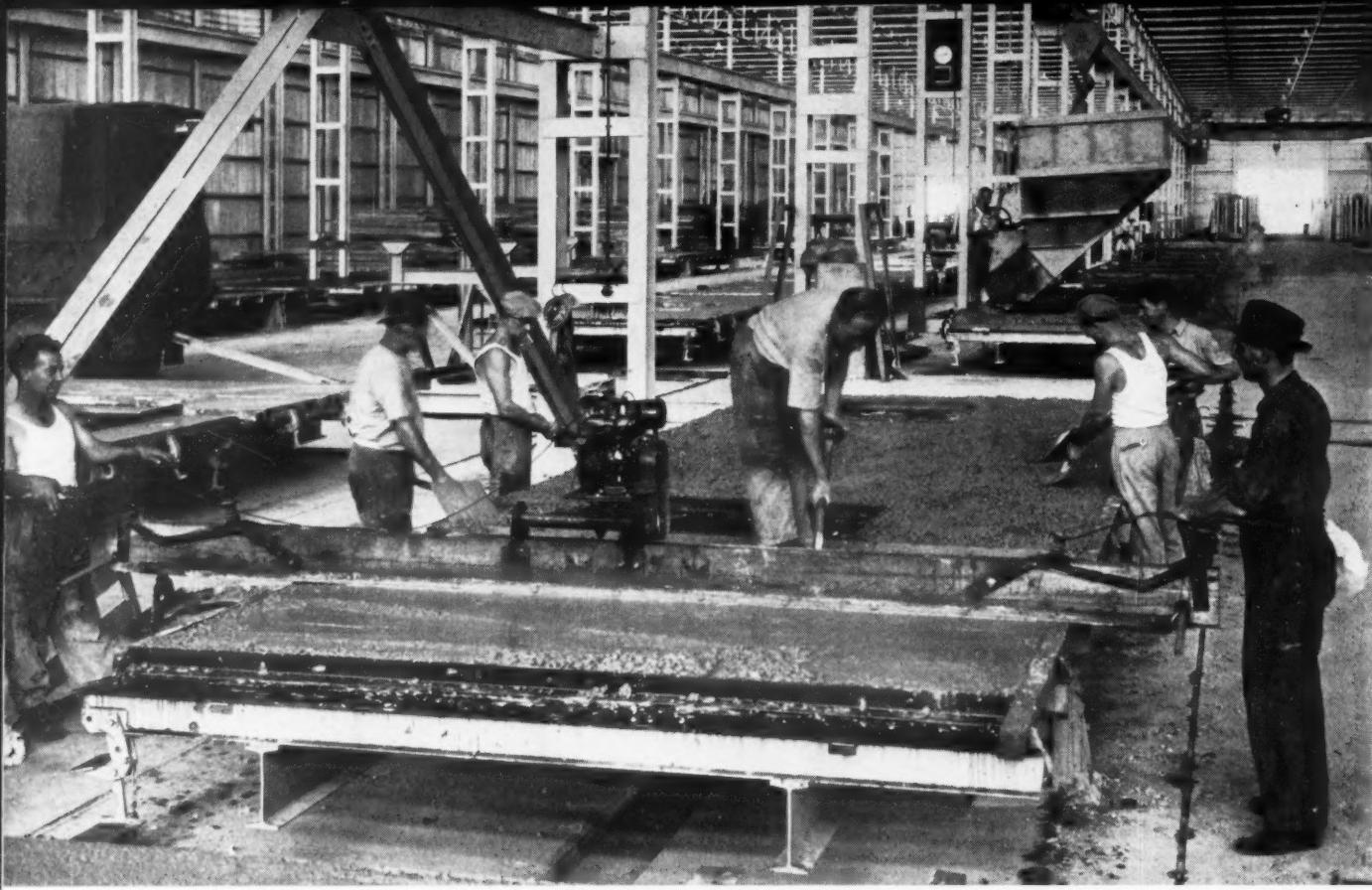
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JAPAN'S EMPEROR AND EMPRESS visit new Sagami Dam (below), largest hydro dam in country. It was recently built with approval of Occupation Commander to supply power and water to Yokohama-Tokyo area.

Press Association Photo

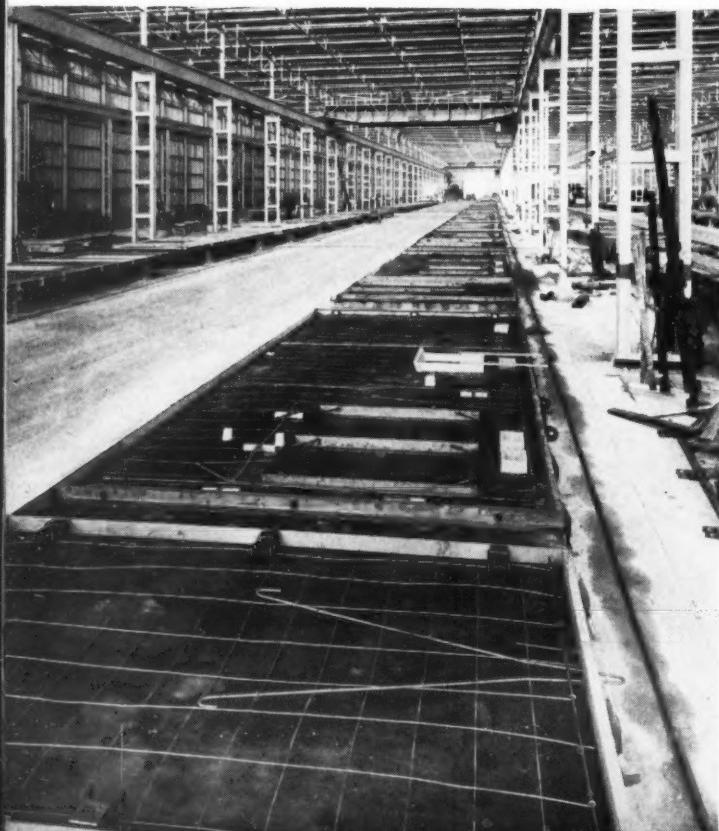
ON LOWER CHARLES RIVER BASIN, new 18,000-kw. steam generating station for Cambridge, Mass., Electric Light Co. goes under construction (below), as P&H 20-ton crane excavates material at column foundation sites and 5,000-lb. Vulcan pile-driver sets concrete piles 54 to 72 ft. long for boiler, turbine and auxiliary machinery supports. Thompson-Starrett Co., New York, are general contractors; Raymond Concrete Pile Co. is handling pile work.





VIBRATING SCREED compacts concrete dumped directly to forms from 3-yd. skip. This was early procedure. Skip now discharges into rolling concreting carriage spanning row of casting tables.

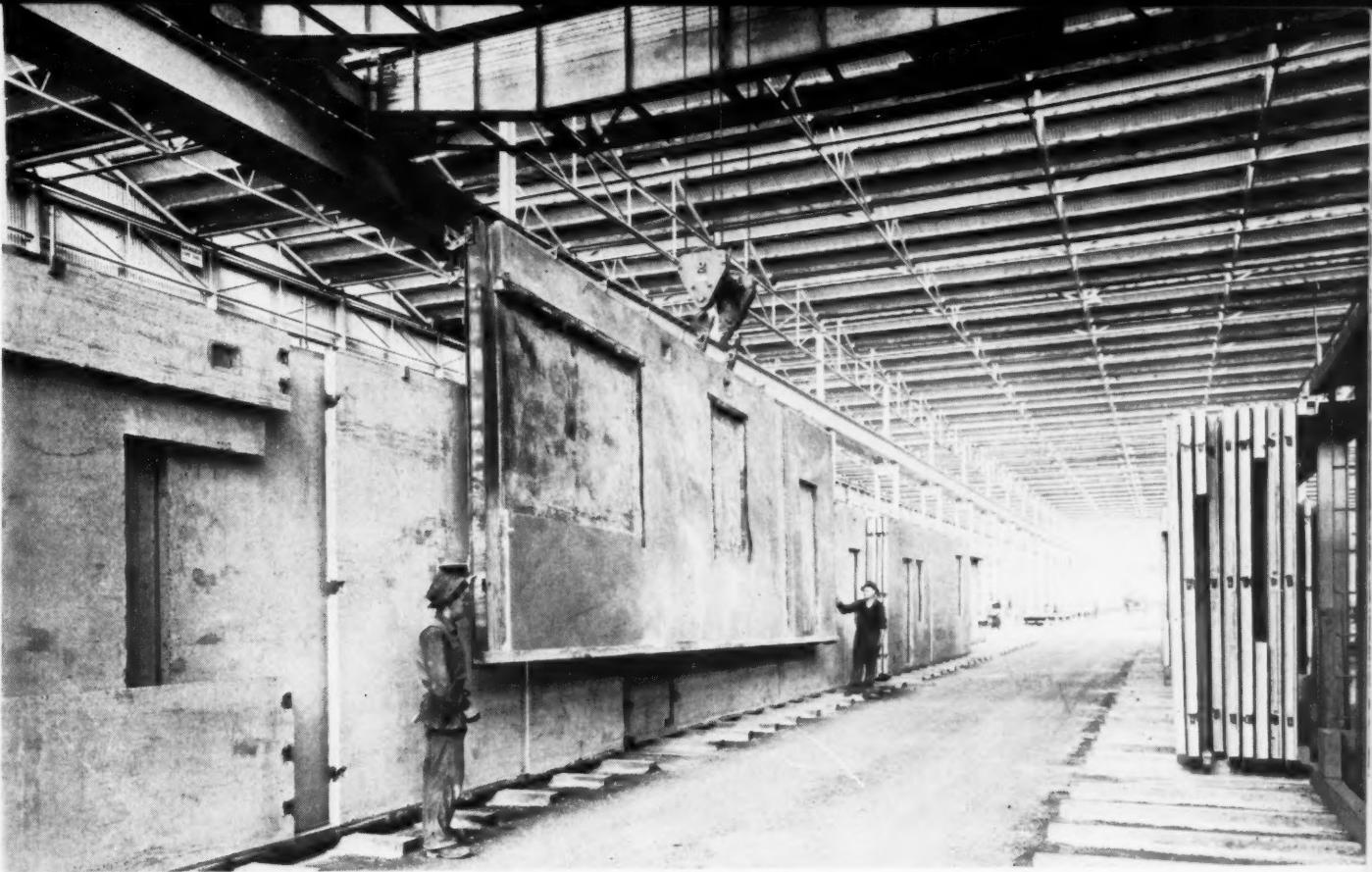
Aussies Put Precast Housing On Assembly Line Production



IN A SWORDS-TO-PLOWSHARES MOVE, the Housing Commission of Victoria, Australia, has converted a 190,000-sq. ft. tank arsenal into a plant producing building components to help lick the Australian housing shortage. Production line methods enable them to turn out 52 precast concrete wall and partition slabs daily—enough for four 1,100-sq. ft. dwellings. The factory also precasts foundation pedestals, floor slabs for laundry and bathrooms, cement tile and concrete brick. In addition, plumbing is sub-assembled, and lumber for floors, ceiling and roofs is precut and bundled at the plant for speedy site installation.

Four main production lines 700 ft. long are devoted to the manufacture of 3-in. wall and partition slabs of air-entrained concrete. Slab reinforcing, a 7-gage, 9x8-in. mesh, is fed from the roll through

READY FOR CONCRETE, wall panels rest on steel casting tables at convenient working height. Table top is pin-hinged at one edge so overhead crane can swing castings vertical for moving.



WALL PANELS are moved to vertical curing racks 24 hr. after pouring, and casting table tops are stripped for re-use. Largest slab is 9x29½ ft., weighs 4½ tons. Note temporary sills, ventilators, and erection inserts cast in 3-in. walls.

a straightening machine, and is cut to a pattern painted on a Masonite shadow board showing all wall openings and edges. Extra $\frac{1}{4}$ - to $\frac{1}{2}$ -in. reinforcing rods, electric conduit and switch boxes, pipe plugs and a top wall plate of wood are then wired to the mesh in accordance with the painted pattern. A trolley moves the assembly to a casting bay and sets it on one of 56 horizontal 30x9½-ft. steel casting tables. Here are placed through-wall ventilators, inserts for field erection bolts, angle-iron side forms, steel forms for doors and windows, and a wood temporary sill on which the slab rests while curing in a vertical position.

Air-entrained concrete (Rocla Ltd. admixture) from a mixing plant alongside the center of the factory is dumped in 3-yd. batches into skips on a rail carriage operating transversely across the build-

ing. Picked up by 10-ton electric overhead cranes spanning the casting bays, the skips are discharged into a hopper on a rail-mounted, electrically-driven concrete distributor or spreader that straddles a row of casting tables. Concrete flows from the hopper to a trough across the width of the spreader, and falls to the form from its rim. Rate of pour is determined by the machine's travel speed, normally 4 ft. per min. As the spreader advances, five flap gates along the trough rim are manually regulated to keep the mix from filling any of the boxed-out wall openings. The poured concrete is roughly screeded by the trough's trailing edge as it passes, and is compacted by a vibrating finishing screed. After recess forms and wood nailers are imbedded in its upper surface, the slab is hand floated.

After 24 hr. an overhead crane lifts table top

McGraw-Hill World News

PRECAST CONCRETE WALLS (below), made on production lines in Australian factory, are assembled into 1,100-sq. ft. home. Total of 460 men, 160 in plant and 300 in field, complete four houses per day.



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GOOSENECK CRANE of unusual design, operated from truck cab by one man, erects precast concrete walls. What appear to be burial headstones beyond mobile 10-ton rig, are factory-precast pedestals placed for foundation of next house.

and slab, and moves them to vertical storage racks where forms and table are stripped from the panel and returned to the production line for re-use. The walls are then cured for 21 days.

Wall slabs are delivered to the erection site on a low-bed trailer. The rig carries eight wall sections, weighing up to 20 tons, in a frame suspended as a pendulum from two trunnions to eliminate transport stresses. Ten-ton cranes place the panels on previously-set precast concrete pedestal foundation. The sections are fastened together by $\frac{1}{2}$ -in. bolts through inserts cast in the walls, and all joints are calked with mastic.

Precast concrete floor slabs for laundry and bath are laid prior to wall closure. After the walls are up, material precast in the plant is added to complete the houses.

EDITOR'S NOTE: Much of the information contained in this article was abstracted from the April 1, 1947, issue of "The Commonwealth Engineer," an Australian publication.

Rugged Side-Dump Truck Bodies Haul Quarry Rock

SIX SPECIALLY DESIGNED Gar Wood dump bodies in tandem pairs, pulled by diesel Autocar tractors, have been built by Fruehauf for off-highway service in the

5½-mi. haul from quarry to plant of the Calaveras Cement Co., San Francisco. The two bodies, which can be dumped independently, are mounted on a trailer with an H-

beam frame and walking beam in place of springs. Each body has 2-in. oak lining in bottom and sides, covered with $\frac{1}{4}$ -in. sheet steel over which inverted steel angles are bolted in place to take wear. Each body is equipped with double-acting hoists that tilt the bed to a 65-deg. dumping angle. Side dumps were preferred to end dumps as an additional trailer unit may later be coupled on to each of the present units.

Haul 40-Ton Load

Each complete unit, which cost \$33,500, has eighteen 12x24-in. heavy-duty tires, weighs 32½ tons empty and in the 12.6-cu. yd. body ordinarily hauls a 40-ton load of rock, that is, a gross load of 72½ tons. The two bodies are loaded by a 120B Bucyrus 5-yd. shovel in about 5 min. The trucks average one 11-mi. round trip per hr.

The special body design was worked out by Ross Miller, of Gar Wood Industries, Wayne, Mich.



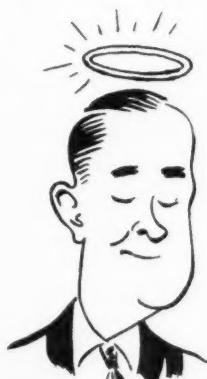
LEGAL ADVENTURES OF TRACTOR CONN

By LESLIE JOBB



By recounting the experiences of Tractor Conn, who symbolizes the average contractor, this series of articles, each based on the decision of an American court and presented in plain, non-legalistic terms, is designed to help construction men avoid costly legal pitfalls.—Editor

The Case of the Satisfied Owner



"Provided, however, that all work under this contract shall be done satisfactory to the owner, and approved by him," is a common provision in a building contract and has given rise to its share of litigation, as Tractor Conn may set up at least two defenses on such a contract, namely:

- (1) That such a clause placing the whole matter in the control of the owner is invalid and unenforceable.
- (2) That, if the contract is valid, then the dissatisfaction of the owner is not in good faith, but merely to avoid carrying out his contract.

On the first point the Courts have ruled that such a clause in a building contract is binding, and Tractor Conn cannot recover if the owner, in good faith, disapproves of the work.

"Contracts requiring the work to be satisfactory to the employer are valid," is a clear statement of the rule from the New Jersey Court of Appeals.

At the same time the Courts have ruled that the owner cannot act arbitrarily, and Tractor Conn can collect if the work should be satisfactory to a reasonable person.

"That which the law will say the contracting parties ought in reason to be satisfied with, the law will say he is satisfied with," is another pertinent quotation from the Federal Courts.

The Case of the Verbal Variation

Tractor Conn had agreed to build a house for Jones and to buy the necessary materials from him. When the work was completed, Conn put in a claim for \$15,000 for extra work, and after a long consultation, Conn wrote to Jones as follows:

"I hereby withdraw my claim for extras and agree to accept \$3,000 in full settlement thereof."

"Here's your money, and now you pay for the materials I supplied to you," Jones suggested.

"Yes, but when we talked the matter over that time, you agreed to cancel your claim for materials if I'd accept \$3,000 in full." Tractor Conn pointed out.

"Probably I did, but you didn't put that in your letter, so you can't give evidence of it now. The rule is that a written document cannot be varied by verbal evidence," Jones pointed out.

"The letter wasn't a formal document but a mere statement of what I would accept," Tractor Conn retorted, and the Pennsylvania Supreme Court ruled in his favor in the case of Garrison vs Salkind 285 Pa. 265.

The Case of the Part Payment



Tractor Conn held an owner's note for \$5,000 and was bargaining for certain building supplies that the owner had for sale.

"Here's a part payment of \$5,000 to bind the bargain," Conn suggested and handed over his owner's note.

"Good as gold," the owner agreed, refused to deliver the supplies, and Conn sued for damages.

"There was no part payment," the owner averred.

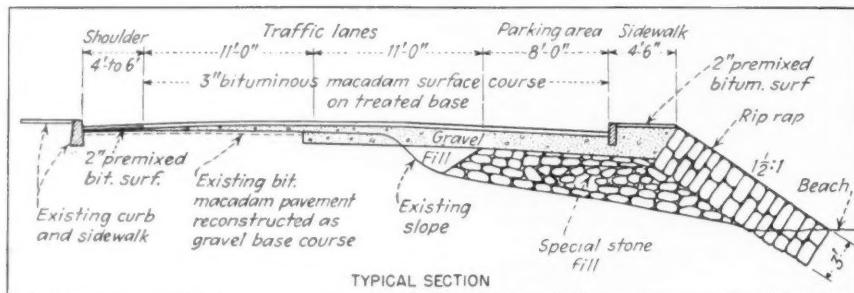
"If your note isn't a part payment I don't know what is," Tractor Conn maintained, and the Massachusetts and Wisconsin Courts have ruled in his favor.

**More Legal Adventures of
Tractor Conn Next Month**



HEAVY GRANITE RIPRAP for road-topped seawall at York Beach, Me., is set in place by two Koehring cranes. Seawall face 3 ft. thick, of blocks weighing up to 8 tons, is backed by fill of smaller stone.

Storm-Proof Road Protects Maine Shore



TIGHT CONSTRUCTION of seawall and road insure maximum resistance to action of severe storms which often drench roadway with tons of salt water. Careful aggregate grading, tight keying, and $\frac{3}{8}$ -in. instead of usual $\frac{1}{2}$ -in. stone chips for seal coats, give dense pavement surface.

TRENCH FOR TOE of riprap is cut by Bucyrus-Erie backhoe on beach as Link-Belt crane places dumped stone. Wood rails indicate correct grade and $1\frac{1}{2}:1$ slope for seawall face.



TO PROTECT THE SHORE at York Beach, where Nature neglected to complete the rock-bound coast of Maine, and to provide a highway of adequate width for heavy summer traffic, the State Highway Commission put in a 7,000-ft. granite riprap seawall and topped it with a new road, proof against storms that had often undermined the existing one. W. H. Hinman, Inc., North Anson, Me., contractor for the \$155,000 project, put a battery of crawler cranes to work setting the stones which weighed up to 8 tons, and pushed the job through in short order.

Heavy Riprap Face

Granite riprap totalling 9,500 cu. yd. was trucked from a quarry $1\frac{1}{2}$ mi. from the project. Lifting holes were drilled $\frac{3}{4}$ in. deep in two faces of the blocks, either by hand with a steel point or by air-driven chisel drill, and the riprap was placed by crane with stone dogs on a chain sling. Pieces averaged 3 tons in weight, and varied from a specified minimum of 500 lb. to a maximum of 8 tons.

Rock too small for riprap was placed behind the seawall face as 5,000 cu. yd. of special stone fill. All face riprap was carefully laid to leave a minimum of open joints, which were thoroughly chinked and rammed with spall.

After the stone fill and riprap were completed, a 3-in. bituminous macadam pavement was laid on a variable reconstructed gravel base course on top of the seawall. As shown in an accompanying sketch, the road has two 11-ft. traffic lanes and an 8-ft. parking area for a total paved width of 30 ft. The road was built in three 10-ft. strips.

Dense Macadam Pavement

For the base, 12,000-sq. yd. of existing macadam was scarified and bladed, and 11,000 cu. yd. of additional gravel was spread. After rolling, the base was treated with tar (RT-4) at 0.4 gal. per sq. yd. Then a 3-in. course of hard, well-graded 2-in. maximum size stone was dump-spread from trucks, worked over by motor grader, rolled tight and penetrated twice with Bitumuls HX emulsified asphalt at the rate of 1 gal. per sq. yd. for each shot. A minimum of 24 hr. elapsed between penetrations to allow for setting, but each one was followed immediately by an application of $\frac{3}{4}$ -in. keystone; the first at 12 lb. per sq. yd., the second at 20. These were distributed by spreader, and were rolled, drag-broomed and re-rolled.

Tight Double Seal

After keying, a first seal coat consisting of a 0.3-gal. per sq. yd. application of HX and a 10-lb. spreading of $\frac{3}{8}$ -in. stone chips was put down, broomed and rolled. A second seal, similar to the first but with an 18-lb. distribution of chips, followed at once to finish the pavement construction.

The seawall and highway were built as a Federal Aid Secondary Project. Sylvester L. Poor, who furnished the accompanying photographs, and Francis A. LeBlanc were resident engineers for the State Highway Commission, and John LaPlant was superintendent for W. H. Hinman Inc.



JOB-BUILT RIG sets granite curb of road on top of seawall. Boom is raised or lowered by operation of dump body on Chevrolet truck.



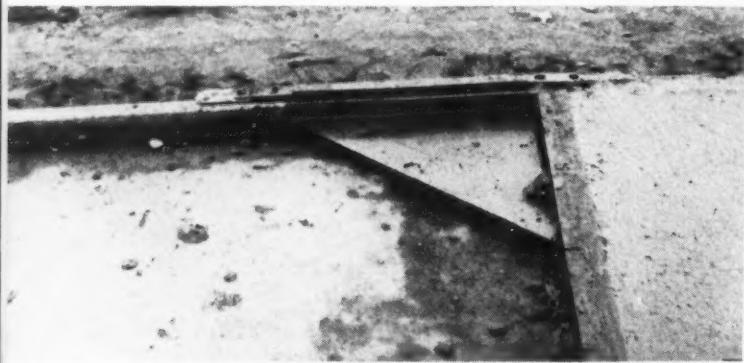
TWO PENETRATIONS and two seal coat applications of emulsified asphalt are given by Littleford distributor shown here on first penetration. Note plywood shield to keep asphalt off curb.

EACH PENETRATION is covered with $\frac{3}{4}$ -in. keystone distributed by Burch spreader (below), pushed by backing dump truck. At right is W. H. HINMAN, JR., general superintendent for contractor.



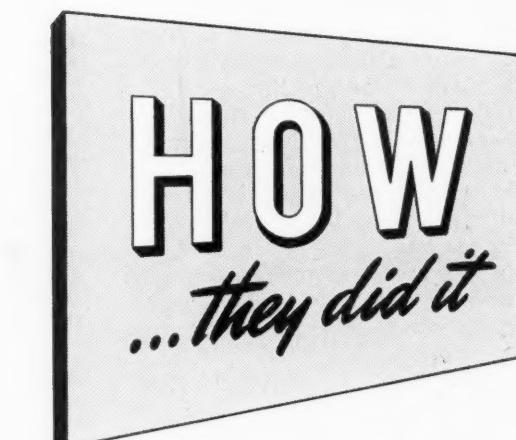


STEEL AND MATERIAL HANDLING for addition of two stories to William Filene & Sons Co. branch store at Worcester, Mass., is speeded by P & H truckcrane with 130-ft. boom working from street level. General contractor is J. W. Bishop Co., Worcester, with Oscar H. Horowitz Co., Cambridge, handling steel erection.



TRIANGULAR STEEL PLATES hold header for construction joint in position at end of each day's work on Wisconsin highway. Devised by Arthur A. Reusch, superintendent for Joe D. Bonness, Inc., contractor, to avoid drilling holes in existing slab, outstanding edge of plate is cut on angle slightly greater than 90 deg., so pressure is exerted on point of plate by header board, thus causing it to bind against form and effectively preventing slippage.

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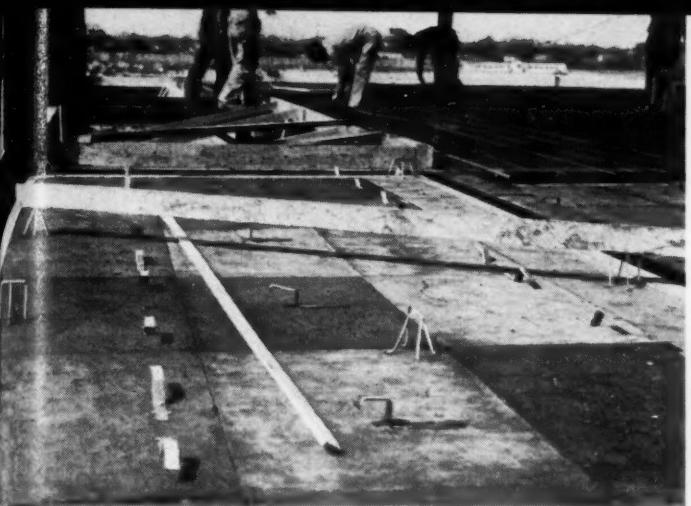


METAL GUIDE RAIL clips to top course of brickwork to enable Inventor L. S. BEAMISH, of Sussex, England, to lay 100 bricks in half an hour. Its attached spirit and plumb levels keep horizontal and perpendicular positions exact.

British Combine Photo

RAMP-LOADED by International TD-14 tractor with bulldozer (below), these two Mississippi Wagons owned by District 4, Amite County, Miss., lose little time at gravel pit on road project.





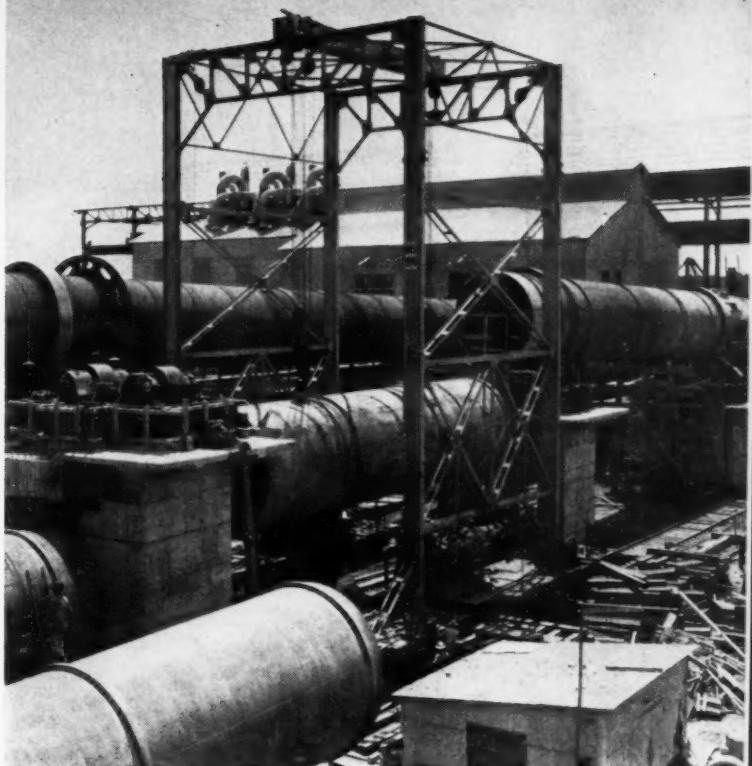
WELDED WIRE WICKETS nail-clinched to plywood panel forms for floor slab serve as finish-grade guides for straightedge in striking off rough concrete, thus eliminating need for removable screeds and for filling in after their removal. Designed by Charles E. Meink, president, National Concrete Fireproofing Co., Cleveland, these welded wire wickets were used for first time in building manufacturing plant for New Departure Division of General Motors Corp., at Sandusky, Ohio.



WATER COOLS TENTS for workers who must sleep during day at construction camp of El Paso Natural Gas Co. near San Simon, Ariz. Common lawn sprinkler is rigged up on ridgepole of each tent, running spray with volume enough to insure saturation of tent top, dropping temperature 15 deg. below that in unsprinkled tents.—From Elton Sterrett.

CONVEYOR of steel rollers at Grand Coulee Dam (below) in Washington transfers 60-ton "spider" for new 108,000 kva. generating unit from trailer to railroad flatcar. Heavy timbers supporting spider slide from one set of 3-in. double rollers on trailer to another set on flatcar. Power is furnished by two truck winches. Rollers are set 17 in. apart, 12 in each row of trailer conveyor and 7 in each row in flatcar. They are 18 in. long.

Bureau of Reclamation Photo

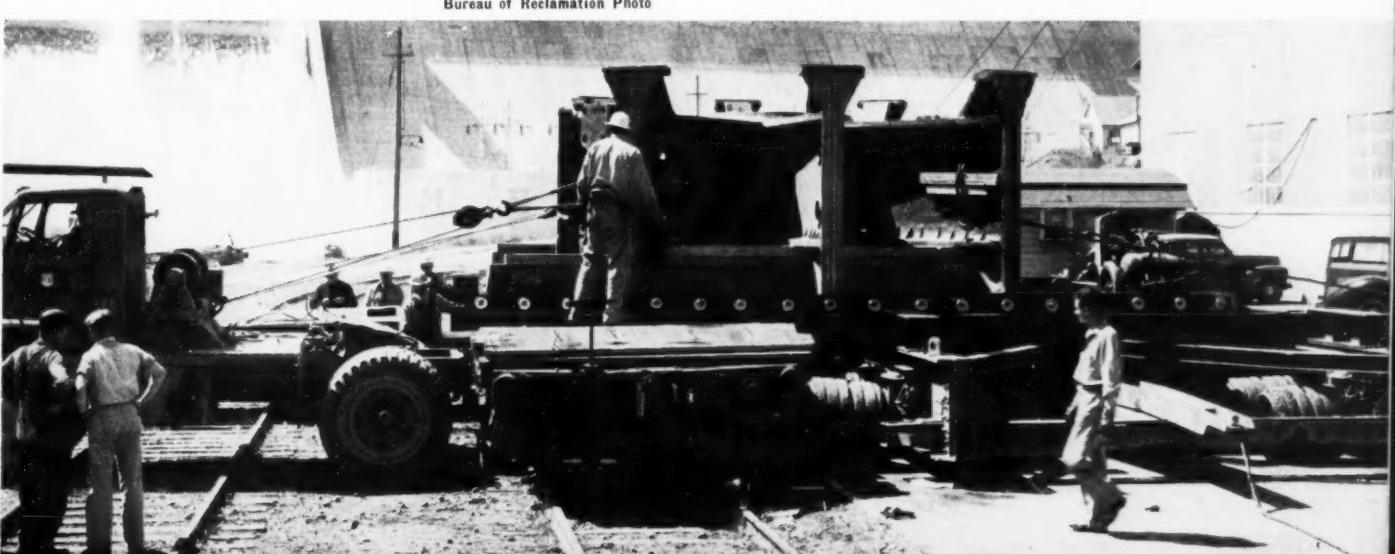


GANTRY CRANE, mounted on two standard 50-ft. railroad flatcars, was designed by The Austin Co., of Cleveland, Ohio, to erect nine 12-ft oil-fired rotary kiln 426 ft. long at General Portland Cement Co. plant in Tampa, Fla. Lifts ranged from 32 to 89 tons. The 33-ton gantry framework has 30-ft. span with overall vertical clearance of 55 ft. and is 40 ft. long.

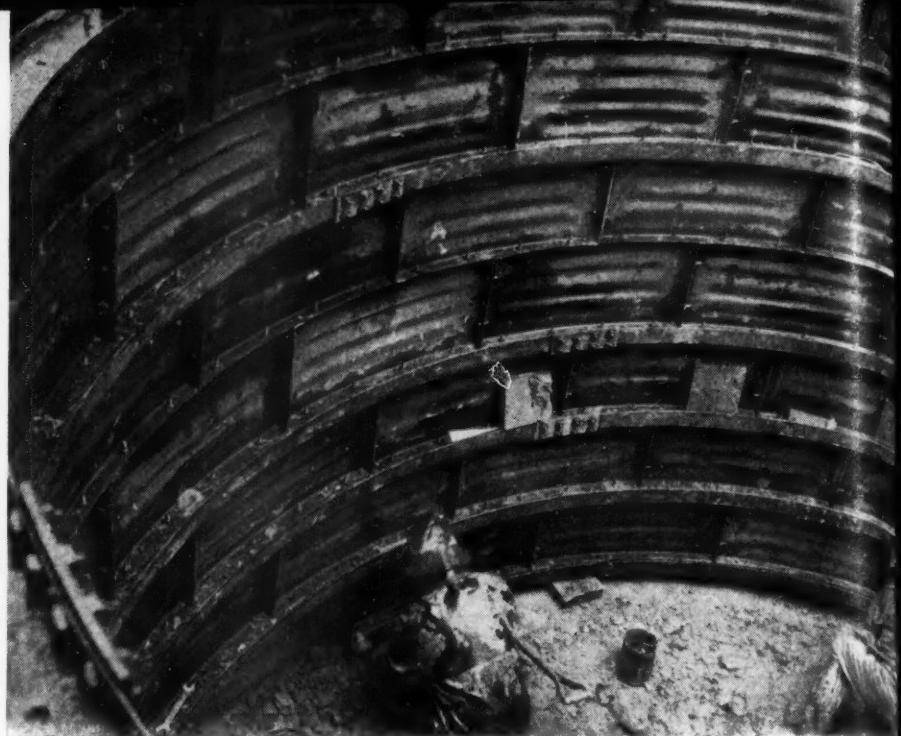


THIS SPRAY BAR can't be knocked loose by passing equipment. W. L. Johnson Construction Co., Hicksville and Columbus, Ohio, rigged up tank wagon with spray bar set alongside tank for sprinkling runway base strips at Patterson Field near Dayton. Also they installed ten single and one double garden hose nozzles along bar to control spray. Each nozzle can be individually adjusted, and double nozzle can be turned down to spray close to forms. Jaeger pump delivers water to nozzles under pressure.

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SOFT-GROUND TUNNELING — part of it under compressed air—through treacherous glacial till served a dual purpose in installing 11,700 ft. of 42- to 48-in. concrete sewer pipe at Cuyahoga Heights, Ohio, near Cleveland. By specifying 6-ft. tunneling with steel liner plate and rib ground support, to be left in place and the space between plate and pipe to be backfilled with concrete, village engineer John A. Petsche was able to get the new storm and sanitary sewer line 100 ft. dep, well below destructive vibration set up in this particular soil by heavy freight trains and nearby stamping plants and forge shops, and also to give the pipe additional support and protection in soft ground. The composite cross-section, with concrete fill pumped in place, is deemed adequate to carry a full load of 50 tons per lin. ft. The heavy design load is dictated by the nature of the ground, a saturated silty clay of



Plates and ribs . . .

PRESSED STEEL liner plates bolted to rib rings line thirteen 16-ft. shafts on Cuyahoga Heights sewer tunnel. Lining is extended downward as excavation progresses, continuously supporting ground.

Plate-Lined Soft-Ground Tunnel

quicksand consistency when wet.

A \$960,000 contract (exclusive of \$134,000 liner plates furnished by the city), awarded to the Kalill Company, Cleveland, called for thirteen 16-ft. construction shafts

up to 105 ft. deep, in which 5-ft. brick manholes were built when tunneling was completed. A total of 1,150 tons of steel plates and ribs, supplied by Truscon Steel Co. and Commercial Shearing and

Stamping Co., was required for shafts and tunnel, all of it left in place.

One Shaft Needs Air—Shaft No. 2, 105 ft. deep, caused trouble in sinking because of soft ground and

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PNEUMATIC CLAY SPADES (below) are necessary for excavating dry ground, but same material when wet resembles quicksand and required compressed-air tunneling in one 600-ft. length of heading. Steel plate and rib lining is carried close to face for field protection.



MUCK is handled in dump boxes (below), loaded by hand at face, transported to shaft bottom on push cars, and hoisted to surface by crane.





Line deep shafts . . .

RIB SPACING is decreased from every two rings of plates to every ring as ground pressure increases. Here Pumpcrete discharge line for embedding sewer pipe in concrete is in place, leading from machine on top to brick-bulkheaded sections in tunnel. Note safety ladder and tarpaulin for controlling splash of infiltrating water from side of shaft.

the outside was sufficient to break a 30-ton hydraulic jack attempting to jack down a plate. The contractor then installed another set of locks and completed the remaining 27 ft. of shaft and 20 ft. of heading in each direction under air.

Single headings were driven from the two end shafts, double headings from all others. Maximum shaft spacing was 2,035 ft.; the longest heading was 1,025 ft. When dry, the ground was hard enough to require air spades, but much of the going was wet. One 600-ft. stretch was so bad that air locks had to be installed and driving proceeded under 13-lb. air pressure. Muck was loaded into dump boxes on narrow-gage cars, which were pushed to the shafts where the boxes were hoisted to the surface by cranes.

Because of the many headings and the nature of the ground, line and grade were carried ahead with extreme care. As a result, all headings met within close tolerances.

Incases Concrete Sewer Pipe

water. All was well until a heavy water inflow was struck at 40-ft. depth. Then air locks were installed, and another 28 ft. was sunk under 18-lb. air pressure. Here an attempt was made to con-

tinue by stepping the shaft in to 13-ft. dia. and then sinking with 10-in. interlocking poling plates. This method had to be abandoned after the poles were driven 9 ft., for the squeeze pressure against

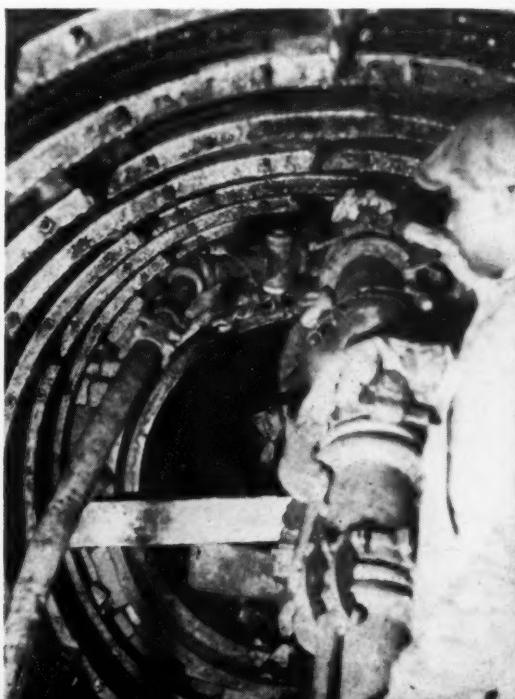
Driving averaged 10 ft. per heading per 8-hr. shift.

Concrete Pumped From Surface—Starting about midway between adjacent shafts, concrete between pipe and tunnel lining was placed

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CONCRETE for backfill between pipe and tunnel is pumped from surface of each shaft by Pumpcrete machine (below). Transit mixers deliver concrete to pump.

SHOT of high-pressure air into concrete discharge line between pump pulsations helps pack concrete backfill around pipe.





JUNCTURE of shaft and double heading. Sewer pipe is in place in far heading, ready for incasement in concrete.

in 50-ft. sections confined by temporary brick bulkheads. Ready-mixed concrete, delivered to a Pumpcrete machine at top of shaft, was pumped through a 6-in. line down the shaft and along the heading. Discharge pipe was extended through the bulkhead to far end of a section to start a pour, then was withdrawn as the section filled up. Shots of air under 80-lb. pressure admitted to the pipeline helped to pack the concrete in place thoroughly.

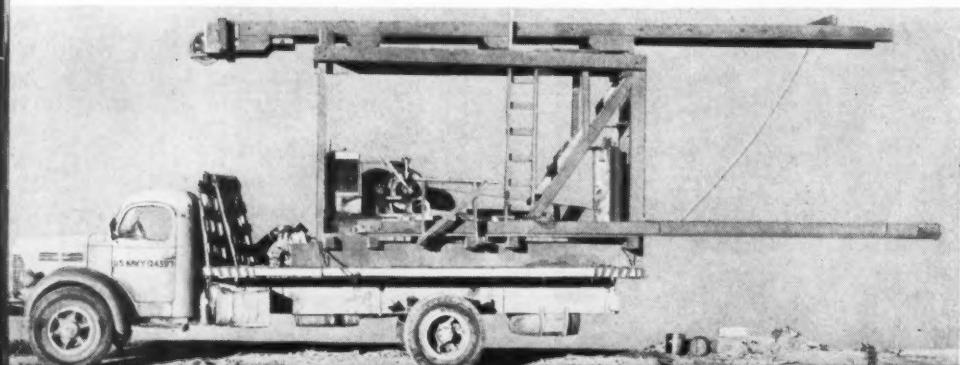
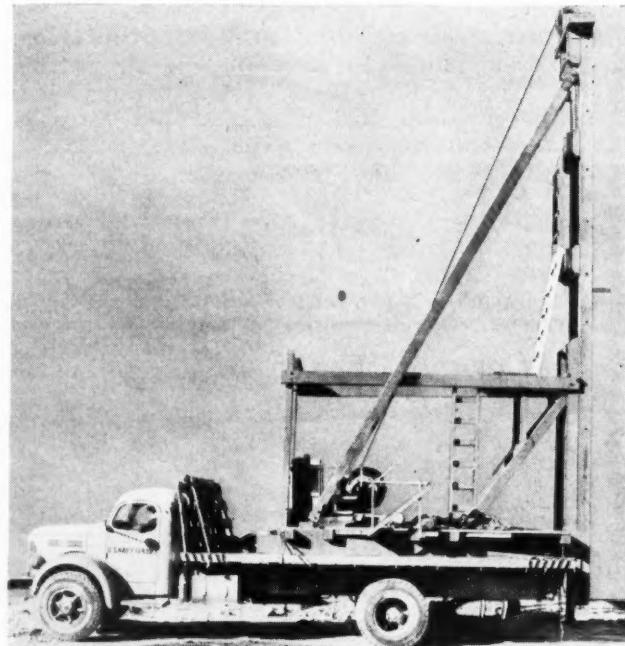
Village engineer John A. Petsche was in charge of the project for the town. Joseph Kalill directed the contracting operations for his firm, assisted by Harry B. Sherman, supervising civil engineer, Arthur J. Hannibal, engineering assistant, and Patrick Heneghan, foreman. Concrete sewer pipe, with integral cast vitrified lining, was furnished by Universal Sewer Pipe Corp. and the Concrete Pipe Co. of Ohio, Inc., both of Cleveland.

Navy Builds Handy Truck Piledriver

A SKID PILEDRIVER that can be mounted on any standard 5-ton truck in a few minutes has been built by the Navy at Mare Island, Cal., out of scrap materials. Timber leads, 30 ft. long, are attached to the skid frame just below midpoint of leads by a hinged bracket so they can fold back over the frame for transportation over the road and for entering shops and other large buildings for driving machine foundations.

The driver, equipped with a drop hammer, is powered by a 30-hp. gas hoist, though a larger engine admittedly would increase the efficiency of the rig. Piles have been pulled with the machine by blocking up under the leads to take all strain off the truck body. The rig has also been found useful for driving steel fence posts and for breaking up concrete pavement.

It was built by Charles E. Tyler, master mechanic at the Mare Island Navy Yard.



WHILE WE DELAY— Russia Drives for the Atlantic

IN THE STRUGGLE to keep western Europe west of the Iron Curtain it is later than you think. Unless the United States quickly mobilizes its own and other nations' resources, World War II will be lost as World War I was lost—by no economic follow-through.

Millions of people in western Europe, living in cold homes or no homes at all, face another winter of near starvation. Some countries are absolutely without dollars to buy abroad the food and fuel they need for survival. Others slide toward that desperate state.

In this welter of misery Russia grasps for dominion over all Europe. Everywhere, as cold and hunger deepen and as men begin to doubt America's determination to help, Russia turns on the pressure. In France the Communists drive to overthrow the Government. In Italy they do likewise. In Greece Russia kills the United Nations investigating commission. In Trieste Tito elbows us out of the way. In Germany and Austria the Soviet commanders alternately stymie and flout the Allied governments.

FACED WITH this bloodless attack, the leaders of western Europe and of the United States have not covered themselves with glory.

Look, for example, at what the sixteen European countries participating in the Paris meetings on the Marshall "plan" first proposed to the United States as a catalog of their needs. In the main it was simply an adding up—to \$30 billion—of what the various countries thought they needed to keep going in the same old way at the same old stands. There was no real start on plans for the mutual aid by European states which is the essence of a successful recovery program... no real start on plans to knock down the barriers which divide European trade into hopelessly inadequate little pockets... no real plans to clean up currencies which deteriorate so fast nobody wants to work for them. *In fact no plans to make people want to work.*

Meanwhile, what have our leaders offered? Not much more than one fine commencement speech by

General Marshall, outlining a good idea, and a couple of carloads of statistics, with more to come.

Not even a beginning has been made on the most crucial part of any European aid program—that of explaining to the American people *what their part must be and why*. It is true that not all the reports of all the statistical committees have been completed. They never will be. But it is also true that the broad outlines of what the United States must do to save Europe are already clear. And it is not simply to provide more dollars, although \$12 to \$16 billion more—the cost of 6 or 8 weeks fighting in World War II—may be required.

A far more basic requirement is leadership which will lift Europe out of the slough of despair and get recovery rolling. Without that leadership more billions for Europe will buy us nothing but more bitterness and remorse on both sides of the Atlantic.

WHAT ARE the ingredients of that leadership? Here are a few:

1. A bi-partisan program for European recovery.

It should be so thoroughly understood and so overwhelmingly supported by both parties that playing politics with it will be like selling military secrets to the enemy.

Truman and Vandenberg have failed miserably to develop and explain a complete program—one in which Europe and America can have full confidence. Nor have Taft and Dewey and other candidates for high office pledged that politics will stop at our shoreline. These men must speak out. To date Herbert Hoover alone has had the courage and vision to state a program.

2. A mobilization of American food supplies.

We must assure people at home and abroad that our crops, cut down by drought and heat, will be stretched to cover minimum European needs (with whatever help we can muster from other nations) without forcing still higher food prices here.

Some food experts are comfortably confident that the stretching can be done. But

meatless and wheatless days, higher extraction of flour from wheat and similar voluntary conservation moves would make it surer. And they would demonstrate that a free country can mobilize itself to meet a very serious crisis.

3. An understanding that relief is one problem and recovery another.

Both problems must be solved. Relief emergencies must be met, some of them at once. But they must not black out the longer task of recovery. Italy illustrates the point. Italy, particularly the south, is flat broke. Help is needed right now to keep people from dying in the streets. But we must eventually do more than keep the Italian people alive. We must help them get back to useful work so that they can stand on their own feet.

4. A steady insistence on results—which means that Europe must find a way to make its people want to work.

In the U.S.S.R. they have a way to get things done. It is to liquidate those who do not work. In the U.S.A. we have a way to get things done. It is to create incentives to make people want to work. Western Europe, notably France and Britain, has fallen between two stools. It has socialized away the incentives, and it does not yet, thank heaven, enslave the laggards. We should make it crystal clear that we have no designs on the national "sovereignty" of others. But we should make it equally clear that we insist that those countries which receive our aid work hard enough to get results. To this end continued aid should be on an installment plan, each installment conditional on getting results. Otherwise more billions can easily disappear down the drain.

5. Insistence on all-out self-aid by European countries.

That is the constructive core of the Marshall idea—to help Europe to help itself. In his brilliant "Report on Germany" and how to get it "off the backs of the American taxpayer," Lewis H. Brown, Johns-Manville Chairman, shows how the export of only 10 million tons of coal a year from Britain to western Europe would speed industrial recovery of the Ruhr immeasurably. There are countless other cases where effort in one European country—or a group of countries

—will break a big industrial bottleneck in another. We should insist that everything possible be done to see they are broken.

6. An agreement with Britain and France giving us authority in western Germany equal to our responsibility.

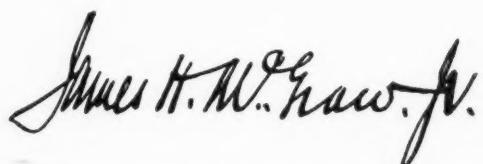
Britain is shifting to us most of the financial burden she has been carrying in the German occupation. Less directly we shall also be carrying much of the French occupation load too. We must have authority in the economic field commensurate with our responsibilities. Otherwise the management of western Germany can poison Anglo-American and Anglo-French relations in addition to wasting resources we could use to promote general European recovery.

It is truly said in the scriptures that the Lord loveth a cheerful giver. But it is not recorded anywhere that anyone, including the recipient, loves a soft-headed giver. Hence as a capstone any program of aid for Europe should have machinery assuring that only what is needed is sent; that what is sent does the job for which it is sent; and that arrangements are made for the recipients to pay back whatever they can.

THE AMERICAN PEOPLE should be told clearly by their leaders that there is no assurance that the best possible program of economic aid for Europe will do the job. The time is very late.

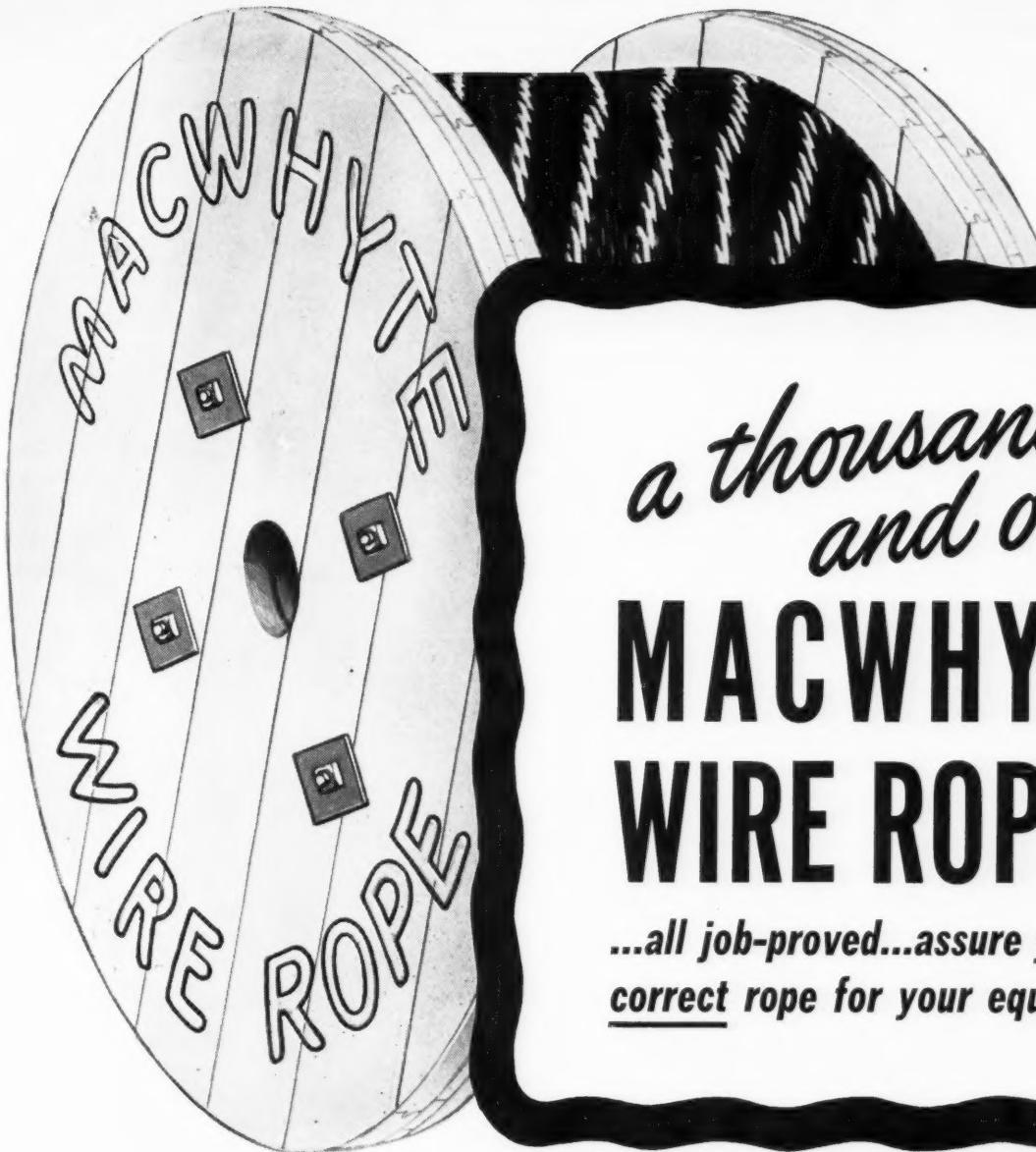
In France and Italy, as our help falters, the Communists right now are provoking strikes which will make the people's suffering more acute. They hope, of course, to overthrow the governments in both those countries and to seize control. If Communist dictatorships are clamped on France and Italy this fall, Russia and her satellites will have advanced to the Atlantic. The Iron Curtain will have moved 500 miles west—toward us.

Americans should be clearly told, therefore, that not to undertake an immediate program for the recovery of Europe is to bring closer the greatest possible national disaster—World War III.



President, McGraw-Hill Publishing Company, Inc.

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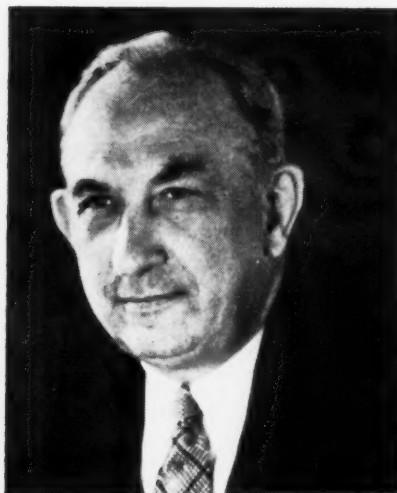
Present and Accounted For...A PAGE OF PERSONALITIES



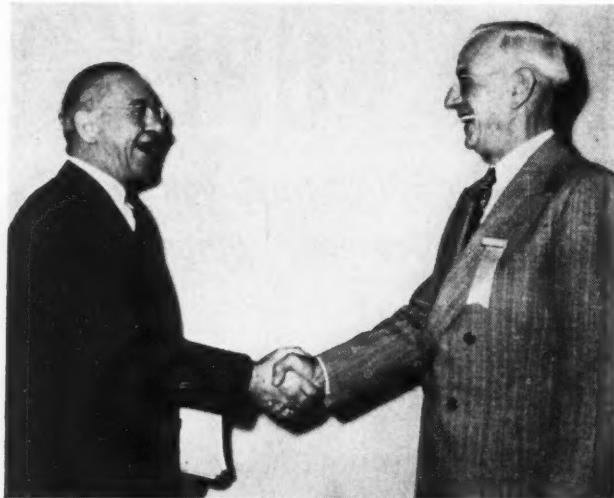
CLIMAXING 27 YEARS with Nevada Department of Highways, WILLIAM T. HOLCOMB, of Carson City, has been named state highway engineer.



ELECTED PRESIDENT of Georgia Branch, Associated General Contractors of America, is E. K. VAN WINKLE, president of Van Winkle & Co., Atlanta.



NEXT PRESIDENT of American Society of Civil Engineers will be RICHARD E. DOUGHERTY, vice-president, improvements and development, New York Central System. He will take office at annual meeting in January.



CONGRATULATING TOM W. HOLMAN (right) chairman, Washington State Highway Commission, on his election as president of Western Association of State Highway Officials is Retiring President AL F. WINKLER, chairman, Montana Highway Commission.



APPOINTED VICE-PRESIDENT of Raymond Concrete Pile Co., of New York, is KIRBY SMITH, former sales manager. During war he served as special assistant to Chief of Bureau of Yards and Docks, U.S. Navy, attaining rank of rear admiral, CEC.

Page 108 — CONSTRUCTION METHODS — October 1947

MODEL OF ATOMIC PILE PROJECT for Brookhaven, L. I., N. Y., National Laboratory is inspected by DR. LYLE BORST (below, left), laboratory director, and WELLS N. THOMPSON, vice-president of The H. K. Ferguson Co., of Cleveland, New York and Houston, who is in charge of engineering and construction for this \$10,000,000 job.

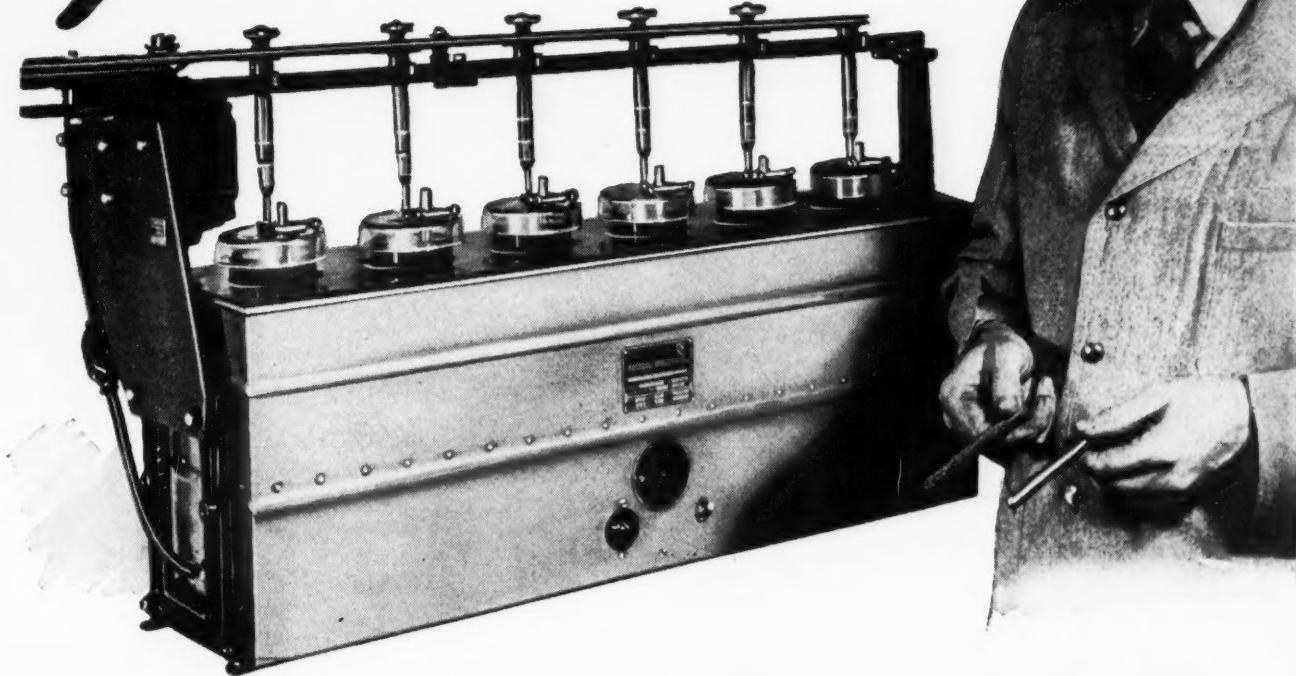


NEW CHIEF HIGHWAY COMMISSIONER of South Carolina is CLAUDE R. McMILLAN (below, left). Succeeding him as state highway engineer is S. N. PEARMAN (right), former southeastern district engineer.



IT ALL

Adds up



Where special qualities are essential for safe, enduring industrial lubrication, Sinclair Research develops additives that will "further improve the best".

Pictured above is one apparatus used by Sinclair Research to determine the rust-inhibiting efficiency of oils manufactured for turbine use. Chemical additives are studied to provide such protection against rust. Obviously, the treated oil sample used on the metal rod in the technician's left hand has high rust-inhibiting efficiency and prevented the deposit shown on the other rod.

All Sinclair Research and Refinery Control is similarly thorough. *It all adds up . . .* to assure you of lubricant qualities essential to efficient and economical industrial maintenance in all applications.

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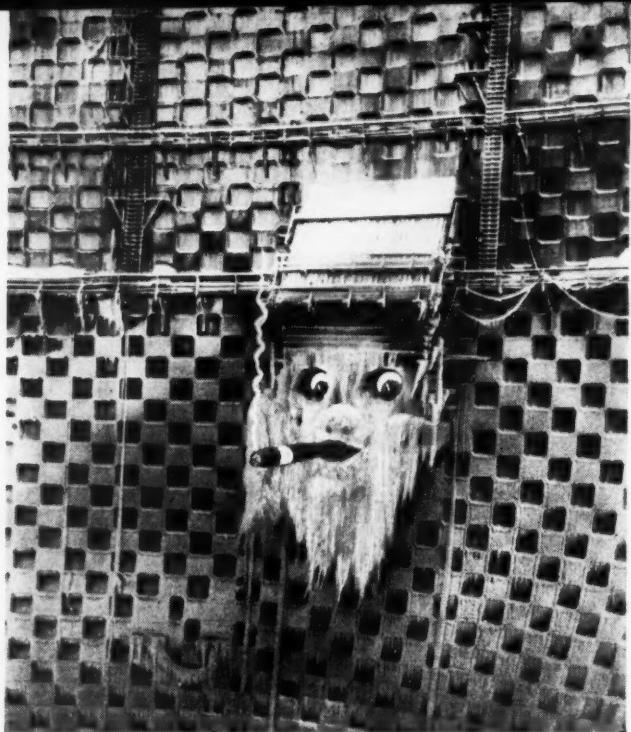
FREE POLISHING JOB is offered Pittsburgh motorists whose cars are splashed with paint during work on Seventh Street bridge. Nes-Con Painting Contracting Co. furnishes this de luxe service.

Press Assoc. Photo

Page 110 — CONSTRUCTION METHODS — October 1947

CAMELS AND HORSES take left road, while motor vehicles go to right, as indicated by diagrammed road sign (below) in Khyber Pass into India from Himalayas.

Press Assoc. Photo

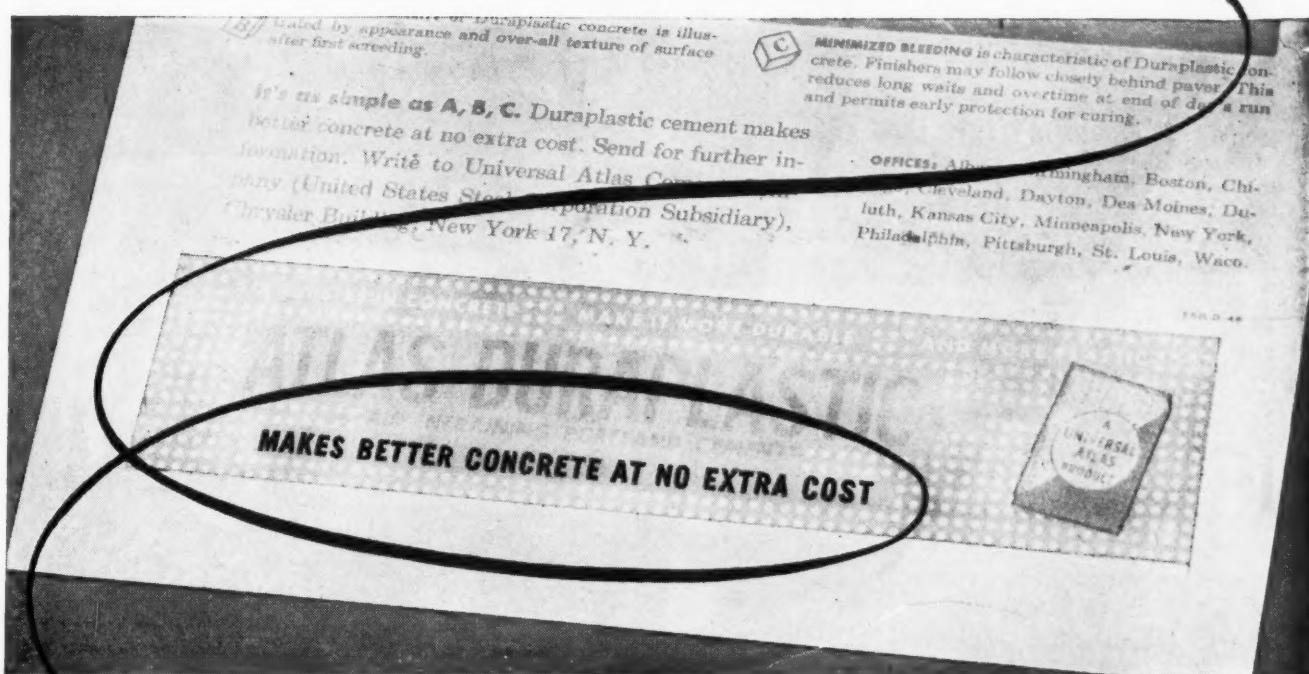


SKAGIT KID makes his startling appearance on downstream face of Ross Dam on Skagit River, Washington. Popeyes and cigar added by Seattle City Light draftsman to this shot of icicle hanging below penstock openings produced bizarre results and a legendary character. 'Tis said Skagit kid uses checkered keyways for waffle iron, a practice that will be stopped soon by addition of concrete to dam face and top to complete stage 3 of construction schedule, which will raise crest 540 ft. above foundations.

HELICOPTER (below) carries dummy bridge span in demonstration by Westland Aircraft, Ltd., England, to show craft's possibilities as aid to construction. Wooden span was hoisted up close to plane by Vickers electrically controlled hydraulic winch on base of rotor drive assembly. Total lift possible with S-51 helicopter is said to be 1,250 lb.



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MAKES BETTER CONCRETE because Atlas Duraplastic Air-Entraining Portland Cement . . .

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AT NO EXTRA COST because Atlas Duraplastic Air-Entraining Portland Cement . . .

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Send for further information. Write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

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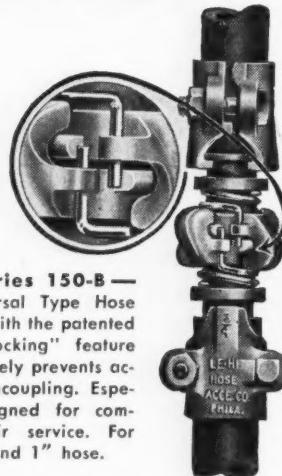
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The Universal Type Hose Coupling with the patented "Safety-Locking" feature that positively prevents accidental uncoupling. Especially designed for compressed air service. For $\frac{1}{2}$ ", $\frac{3}{4}$ " and 1" hose.

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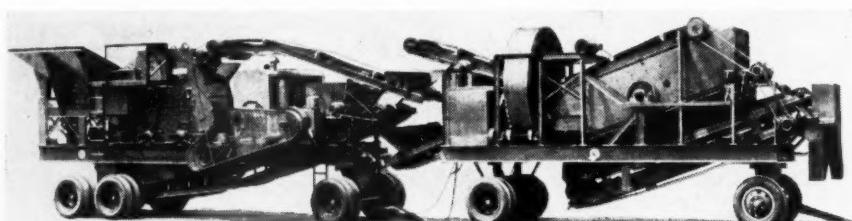
CONSTRUCTION EQUIPMENT NEWS

OCTOBER 1947 REVIEW of Construction Machinery and Materials



TRACTOR-SCRAPER UNIT—Two-wheeled, rubber-tired diesel tractor coupled by pedestal hitch to 17½-cu.yd. heaped capacity scraper is first of LaPlant-Choate's new group of earthmoving equipment. Combination unit, called Moto-Scraper, features air brakes on all four wheels, and positive hydraulic steering to eliminate jack-knifing. Tractor is powered by Buda supercharged 6-cylinder diesel engine rated 225 hp. at 1,800 rpm., giving road speeds up to 18 mph. Two double-acting hydraulic rams, universally-mounted on tractor and connected to extension on pedestal

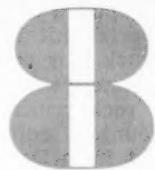
of scraper's main frame, provide rigid steering control with positive drive on both wheels. Rams are controlled by steering wheel on tractor. Selective air-brake operation allows braking power to be applied to scraper wheels alone through hand lever or to all wheels by foot pedal. Scraper is positive forced ejection type operated by air-powered cable-control unit on rear of tractor. Preliminary information on rig, formerly designated Primemover, appeared in CONSTRUCTION METHODS, Sept. '47, p. 122.—LaPlant-Choate Mfg. Co., Inc., Cedar Rapids, Iowa.



CRUSHING AND SCREENING PLANT—New portable two-unit crushing and screening plant is one-man push-button controlled, and is adaptable to either gravel crushing or quarry operations. Diesel power plant operates 3030 double impeller breaker, while electric generator driven from same diesel supplies power to individual electric motors for driving feeder, conveyors, screen and elevating wheel on screening

unit. It can produce one, two or three products. Crushing or breaking unit is compact semi or full trailer assembly 28 ft. long, equipped with rear axle equalizers and removable front axle assembly. Breaker incorporates large chamber above two 2-ton cast steel impellers, allowing breaking in suspension. Plant has capacity up to 200 tons per hour of crushed stone.—New Holland Mfg. Co., Mountville, Pa.

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SAVE TRAVEL TIME • SPEED OPERATIONS • CUT JOB COSTS

REGARDLESS of the type work you are doing—ditch cutting, bank cutting, blading, scarifying, aggregate mixing, spreading—Adams' 8 overlapping forward speeds provide instantly the right speed for doing the job at the fastest practical rate.

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transport speeds (up to 21 m.p.h.) importantly reduce costly, non-productive travel time to jobs and between jobs.

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CRAWLER TRACTOR — New 20-ton HD-19 diesel is now in production. Increased capacity is provided by three-stage hydraulic torque converter introduced into power train of tractor. Application of power-drive principle permits horsepower output to be held constantly near maximum. Positive-seal grease-packed truck wheels, idlers, and



support rollers require greasing only once every 1,000 hr. Wide, comfortable, easily adjusted operator's seat affords maximum visibility to front and rear. Hydraulically powered steering levers offer fingertip control. Transmission has only two forward speeds (0 to 3 low gear, 0 to 7 high) and one reverse (0 to 5.5). A-frame track-stabilizer design eliminates twisting strains and provides rigid track alignment. Ground clearance is 16 in.—Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

POWER TAKEOFF—Easily installed in driveshaft of Dodge Power Wagon truck, new heavy-duty power takeoff immediately converts unit into efficient equipment truck. Air compressors, generators, concrete mixers, welders, pumps, rock crushers and other truck-mounted equipment are driven direct from Dodge engine through takeoff. Need for separate, auxiliary engines is eliminated. Takeoff uses, as basic principle, internal and external gear drive, which operates as strong and durable spline.—Davey Compressor Co., Kent, Ohio.

DETACHABLE MOIL POINT—Forged of two different types of steel, new moil point has shank made of "tough" steel for long life and point of "hard" steel for cutting



ability. When point wears out, it can be detached and new one placed on same shank. Old point can be reground by any workman. — Rock Bit Sales & Service Co., 2514 E. Cumberland St., Philadelphia 25, Pa.

Here's portable power lubrication for machines on the job!



ALEMITE PORTABLE SERVICE STATION

bringing power lubrication to a large dirt mover out on the job—just one of many ways that Alemite helps the construction industry cut costs.

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Alemite Portable Service Stations come in various combinations. High and low pressure grease pumps, oil pumps, and hose reels. Units include suitable connections and delivery hose, installation accessories, etc. Send for catalogue describing this equipment. Write to Alemite, 1840 Diversey Parkway, Chicago 14, Illinois.

10 Different Outfits Available to Fit Your Needs

Model 2436 . . . 3 pump outfit
Model 2437 . . . 4 pump outfit
Model 2438 . . . 5 pump outfit

7 other models available which fit either 100 or 400 lb. lubricant drums.

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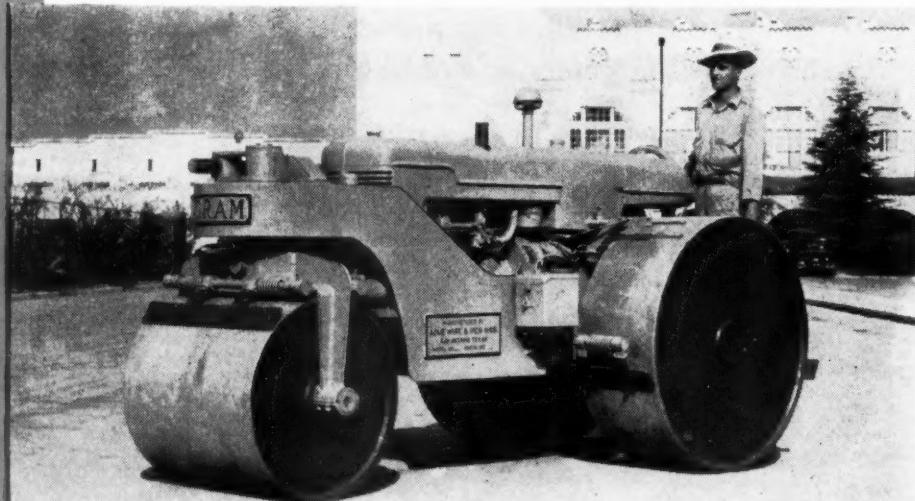
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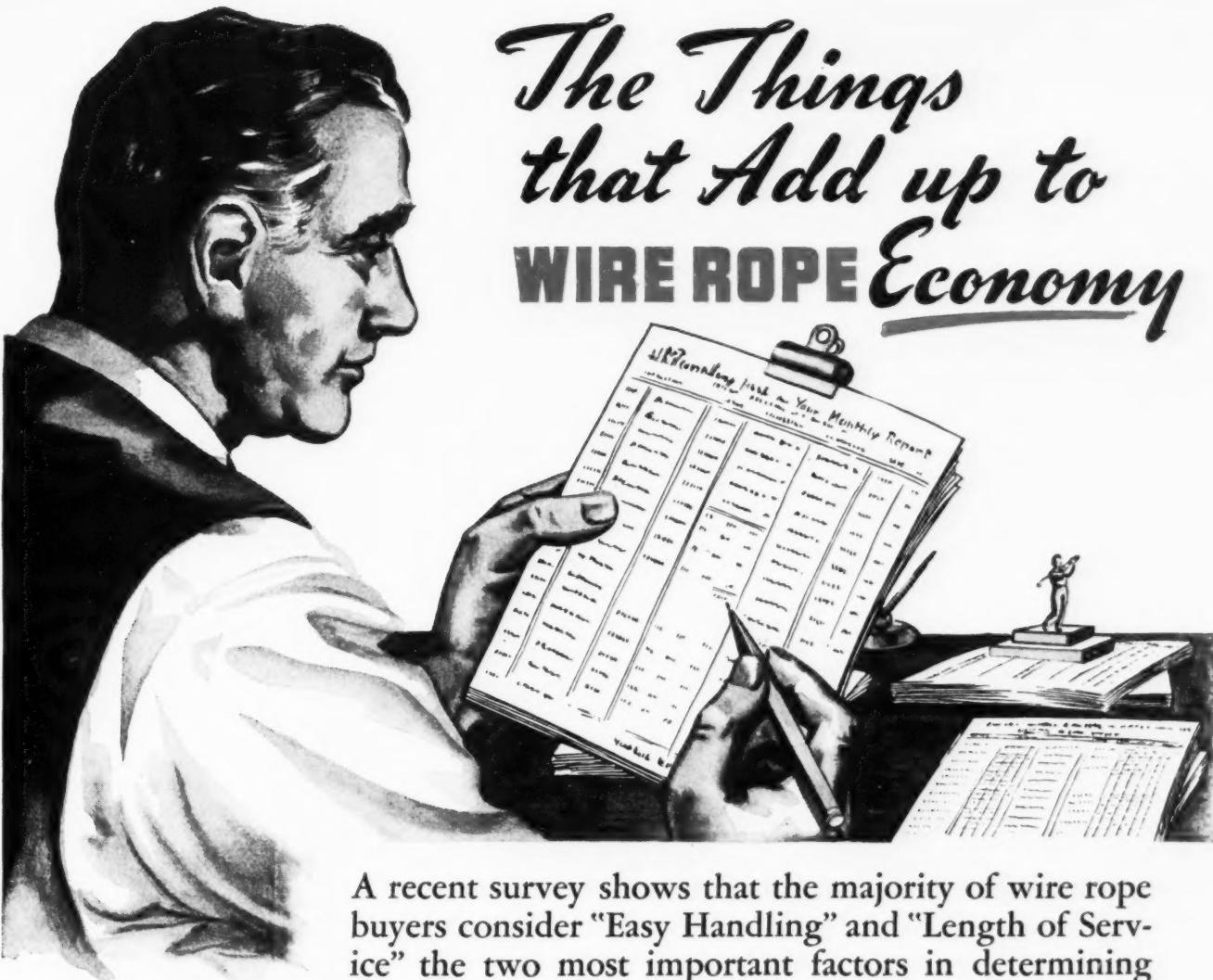
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Need more weight? There's an Ingram Roller for every job. Five sizes—rolling weights of 4 to 12 tons. And every Ingram has variable weight. See your nearest distributor!



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The Parmanco Horizontal is adapted to all forms of high-wall drilling, will handle a six-inch auger up to a distance of sixty feet or more and, by use of our patented augers with interrupted flights and secondary cutters, will drill an absolutely clean hole with a minimum of torque. It permits the drilling of a controlled-angle hole which makes possible a great saving of explosives through the cantilever effect of this controlled-angle drilled hole.

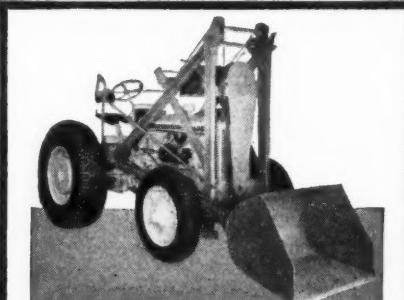
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TWO - WHEEL TRACTOR — Two-wheel, full traction diesel-powered tractor is designed to pull Heil 16-yd. scrapers and 18-yd. bottom-dump wagons. Hydraulic power steering, controlled by conventional steering wheel, may be assisted by individually hand-controlled air-operated wheel brakes. Foot control for brakes gives unified action on



both wheels. Positive steering eliminates snaking or hunting, and rugged swivel hitch not only provides freedom of motion between tractor and wagon, but also completely eliminates "nosing." Engine develops 150 hp. at 1,900 rpm. Overall dimensions: Length, 14 ft. 9 1/2 in.; width, 9 ft. 7/8 in.; height, 9 ft. 8 1/2 in.; tread, 82 in. Tractor has four speeds forward, plus overdrive and reverse. Maximum travel exceeds 20 mph. Unit weighs approximately 16,500 lb. — The Heil Co., Milwaukee 1, Wis.



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1/2 and 5/8 cu. yd. Capacity

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These Results Saved One Company \$20,000 Last Year

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MORE TONS.....LESS DRILLING

Before Using Rockmaster System

Type of stone	Hard limestone that tends to break large
Primary drilling	3 wagon drills
Layout	23' deep, 4' burden, 4' centers, single line of holes
Maximum lbs. in shot	Not over 500 due to vibration (quarry is within city limits)
Secondary	5 jack hammers
Daily tonnage	850 tons

With Rockmaster System

Type of stone	Same
Primary drilling	2 wagon drills
Layout	23' deep, 6' burden, 8' centers, 3 lines of holes
Maximum lbs. in shot	1500, and not as much vibration as in a 500-lb. shot when using ordinary blasting methods
Secondary drilling	1 jack hammer
Daily tonnage	1350 tons

"WE saved \$20,000 in this one quarry last year by using the Rockmaster System," says this quarry owner!

Quarries, strip pits, mines and construction projects the country over are getting more profitable results from the Rockmaster System of blasting, an original Atlas development. The Rockmaster principle of milli-second delays between drill holes, coupled with proper choice of explosives and loading, has not only upped fragmentation of burden and increased production, but has also cut down on noise and vibration where these have been a difficult problem.

Can Rockmaster do as much for you as it did for the quarry man we quote? We don't know, but in all fairness to yourself, why not find out? Call in your Atlas representative, and he'll be glad to give you the facts about what you can expect from Rockmaster.

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YOU THE GREATER
SAFETY OF MANASITE
DETONATORS

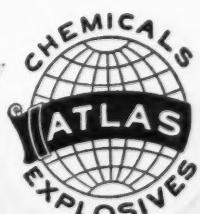


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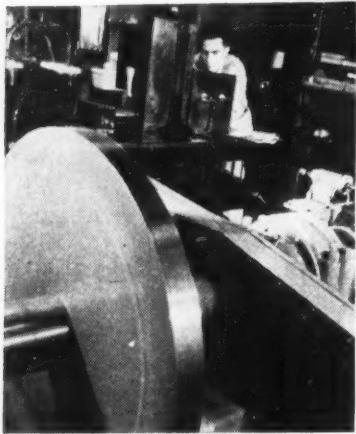
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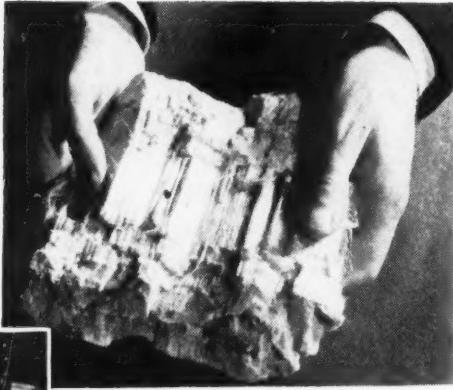
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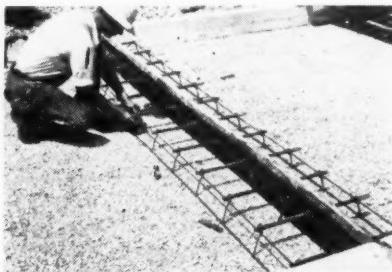


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under actual field
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ROAD SLAB JOINT—New highway load transfer unit or road joint assembly is lightweight, rigid, easily installed dowel and supporting frame combination. Alternate dowels are welded to one side frame and one center wire, while remaining bars are welded to opposite frame and second center wire, so



halves of assembly may be drawn apart for insertion of joint filler strip. Center wires hold filler vertical; side frames hold dowels securely at each end. Dowel bar unit for 12-ft. Pennsylvania road slab weighs only 84 lb. and is easily handled by two men. Metal caps are provided for dowels' free ends to permit movement in concrete under expansion or contraction.—**Bethlehem Steel Co., Inc., Bethlehem, Pa.**

SAFETY VALVE—New safety valve for air compressors utilizes nylon disk working against bronze seat. Only 2 3/4-in. over-all in height, it meets all A.S.M.E. requirements for unfired pressure vessels. It has stainless base, cadmium-plated cap and spring and sturdy brass body. It is suitable for any set pressure up to 250 psi. and is standard with 1/8-, 1/4-, 3/8-, and 1/2-in. N.P.T. male inlet connection.—**Manning, Maxwell & Moore, Inc., Bridgeport 2, Conn.**

ENGINE-DRIVEN WELDER—Flex-arc lightweight engine-driven welder, designed for 200 amp. at 30 v. on basis of 50-percent duty cycle, comes with complete accessories.



Generator is direct-connected to Hercules IXB engine. Welding current is adjustable from 30 amp. at 20 v. to 250 amp. at 30 v. It is available as portable or stationary model. **Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.**

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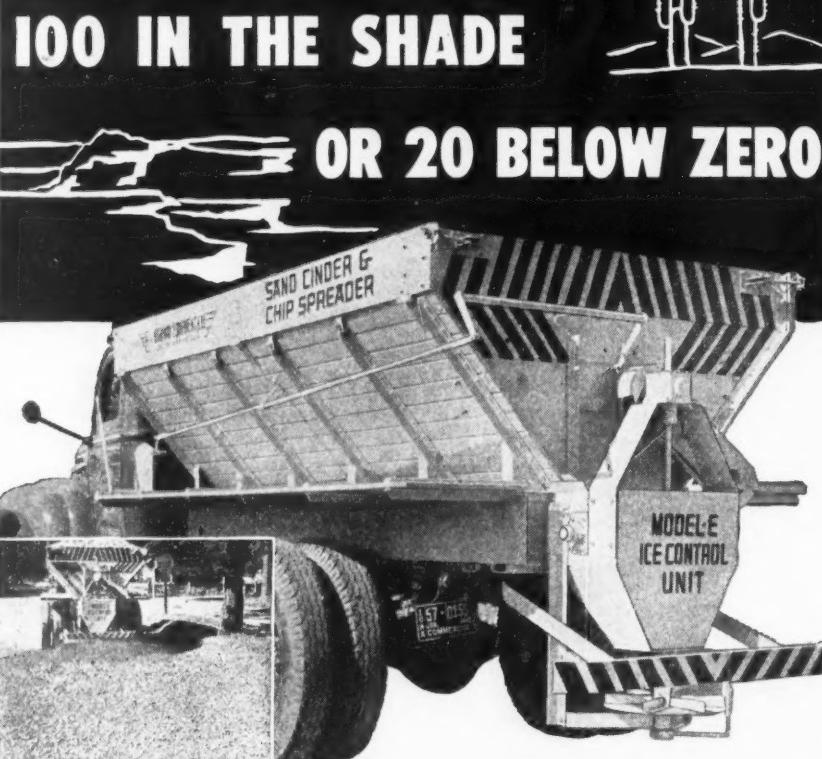
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- Spreading sand and cinders for ice control on streets, highways, airport runways, etc.
- Spreading calcium chloride for dust control on secondary roads, parking lots, airports, fair grounds, etc.
- For seal coat work, spreading chips, sand, etc., over newly laid oil or blacktop
- Patch work spreading
- Spreading commercial fertilizers in parks, on lawns
- Hauling crushed rock and chips
- General road and shoulder maintenance

14 OUTSTANDING FEATURES THAT SAVE TIME, MATERIAL AND MONEY

1. Uniform spread at all speeds.
2. Covers 2 or 4 lane highway in one operation.
3. Spreads material on highway where needed. No material wasted on shoulders.
4. Operates forward or reverse.
5. Spreads to right, to left, or both sides as desired.
6. Material is cast low to ground—no interference with traffic.
7. Spread may be started or stopped with truck in motion.
8. All controls within easy reach of driver's seat—one-man operation.
9. Material is also spread ahead of rear wheels of truck assuring traction and safety at all operating speeds.
10. Electrically welded all steel frame.
11. Wooden hopper eliminates corrosion from chlorides, assures longer life; also wet material won't freeze to sides in cold weather as is often the case with a steel hopper.
12. Ball bearing gear boxes, oil tight, dust and water proof.
13. Self-unloading 24" wide conveyor assures steady material flow.
14. Hopper sides hinged for easier hand loading.

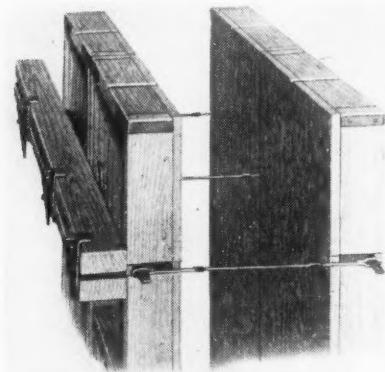
The Highway Model "E" Spreader is made in 9, 11, 13 and 15 ft. lengths—easily mounted on any standard truck chassis. Other lengths made on special order. Write for literature—today.

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MANUFACTURERS OF THE WORLD'S MOST COMPLETE LINE OF SPREADERS

PANEL FORM SYSTEM—Tie rods in standard panel (2-ft. wide) are anchored from sides of panels and hold both ways. They do not pass through, therefore there is no fishing for tie openings in opposite panel. Drilling for ties and plugging up old tie holes is eliminated. In dismantling forms, as soon as



connecting bolt to which ties are anchored is removed, they may be lifted straight up and back. Tie rod has break-back feature and, instead of spreader washers, has looped ends through which connecting bolt between adjacent panels is passed, making combined spreader and tie. No nailing of band iron ties or adjusting of washer ties is necessary. —Symons Clamp & Mfg. Co., 4249 W. Diversey Ave., Chicago 39, Ill.

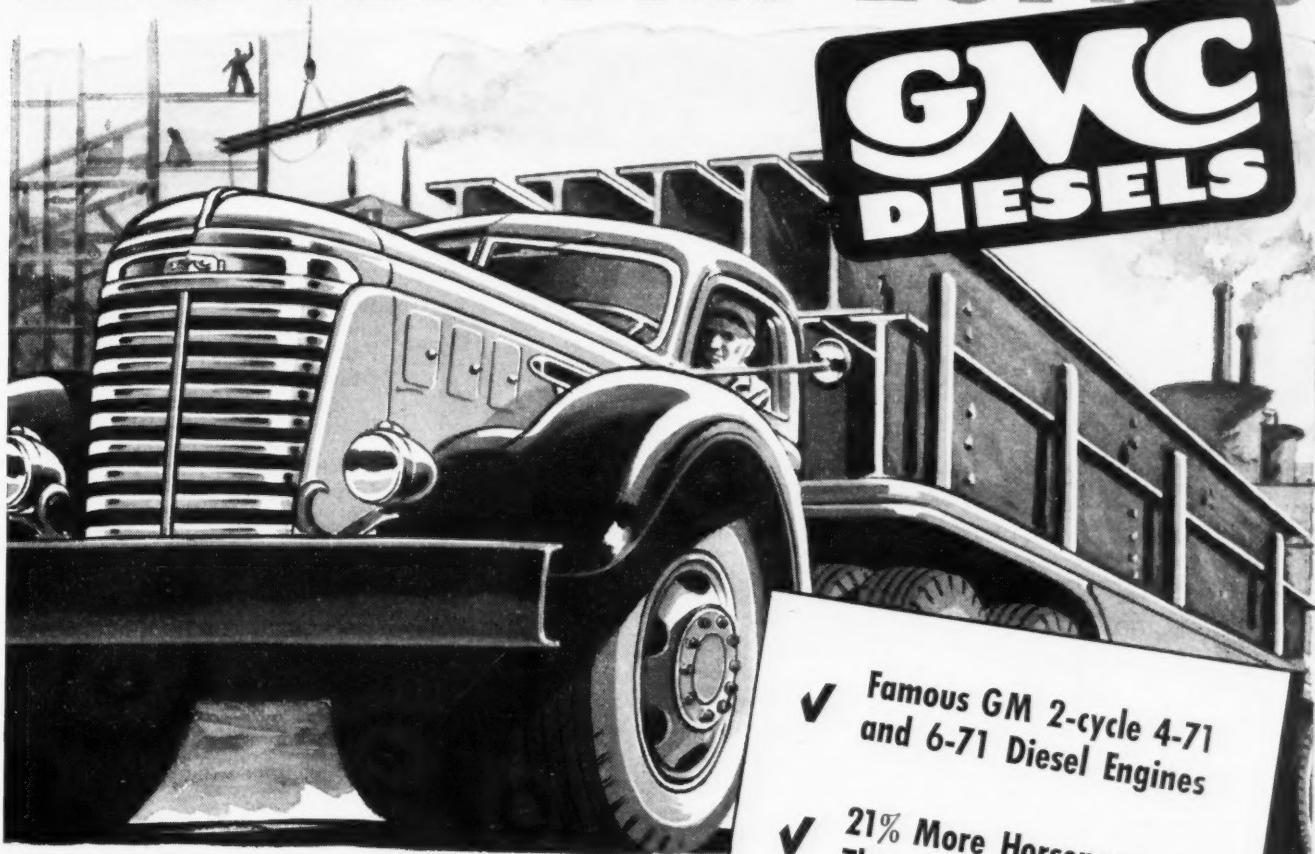
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PILE HAMMERS and EXTRACTORS

Now available in a complete, standardized line of ten double-acting hammers, five single-acting hammers and two double-acting extractors. Write us for free descriptive Bulletins 55 and 57.

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Powered to Pull BIGGER PAY LOADS



GMC 2-cycle Diesel truck engines provide twice as many power strokes as conventional 4-cycle engines. Pay loads can be greater because engine weight is less, with the same amount of power. Other famous GMC Diesel engine features include Direct Triple-Duty Injectors, Full-Flo Lubrication, Pressurized Water Circulation, Thermostatically Controlled Water By-Pass and Radiator Shutters.

GMC Diesel truck chassis are exclusively engineered for Diesel operation with such outstanding features as Straight Frame Side Rails, Wide Track Front Axles, Heavy Duty Clutches and Brakes, Transmission and Rear Axle options to handle all types of jobs.

GMC also gives you the widest selection of Diesels on the market today . . . 8 different truck and tractor models with Gross Weight Ratings from 30,000 to 90,000 pounds . . . all ready for quick delivery.

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✓ 21% More Horsepower Than Previous Models

✓ Chassis Specially Designed for Diesel Operation

✓ Widest Range of Models on the Market

✓ Gross Weight Ratings 30,000 to 90,000 Pounds

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Shouldn't we find out
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Reeving does mean
bigger payloads?
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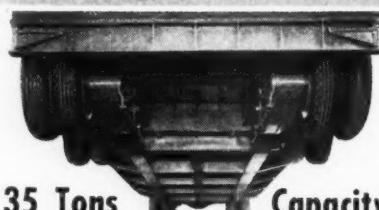
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ROGERS

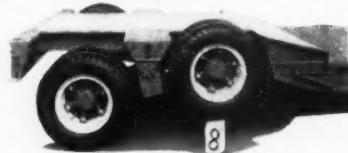
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Special construction affords
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Trailer embodies characteristic features of Rogers proven design.

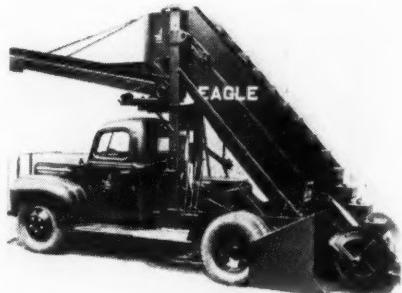


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builds 'em
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TRUCK - MOUNTED LOADER—Model 400 loader, with positive crowd, features full hydraulic controls operated from platform just behind truck cab. Loader is operated by one man, and has 3- to 5-yd. per minute capacity. Overall height is



only 11 ft. 10 in. Conveyor belt discharge operates through 180-deg. swing; is capable of discharging wet material without depending on gravity flow. Approximate weight complete is 11,500 lb. Loader mounts on any 1½- or 2-ton truck, with power supplied by truck engine through power takeoff from transmission.—**Eagle Crusher Co., Inc., Galion, Ohio.**

ELECTRODES—Two new steel electrodes called "Low Temperature" EutecTrodes 66 AC and 660 DC, for arc welding steel at low base metal heat have been developed. They are flux-coated universal electrodes for superior welding of all types of steel producing a smooth, high tensile, crack-resistant weld, and particularly suitable for vertical position welding. For welding low carbon steel to high carbon, EutecTrode 66 can be successfully used. Being a universal rod for all types of steel, EutecTrode 66 eliminates the necessity for determining the base metal before welding. Pre-heating is unnecessary. The electrode is available in sizes 3/16, 5/32, 1/4, and 3/32 in. dia.—**Eutectic Welding Alloys Corp., 40 Worth St., New York 13, N. Y.**



CLEVIS HOOK—Newly developed hook, with clevis design utilizing bolt, slotted nut and cotter pin for fastening, can be easily attached and switched from one job to another, while meeting all safety requirements. It can be supplied with safety latch or with reversed jaw. It is made in 1½-, 2-, 3- and 5-ton sizes. All parts, including bolts, are of drop-forged, heat-treated steel.—**Thomas Laughlin Co., Portland 6, Me.**

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ENGINEERED FOR BALANCE Means more "Pay-Dirt" to Contractors.

Dependable tractor equipment operation is essential to earthmoving profits—it's the secret of success.

Isaacson Engineers realized this in designing their line of tractor equipment. They knew that perfect coordination between tractor and equipment would eliminate breakdowns and costly delays by utilizing every ounce of power without excessive wear, they could give more "pay-dirt" every load—more loads per day—more profitable days per year of operation.

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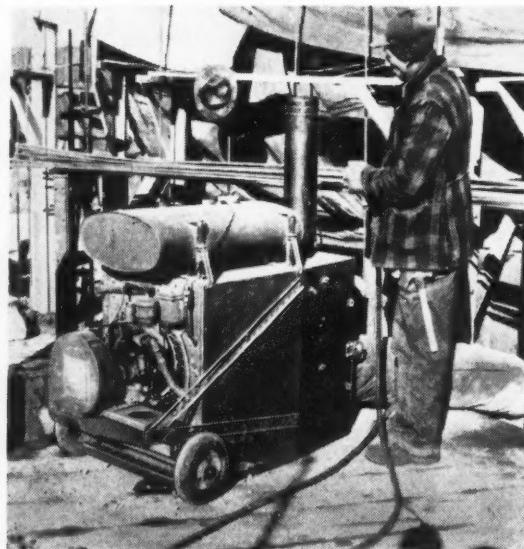
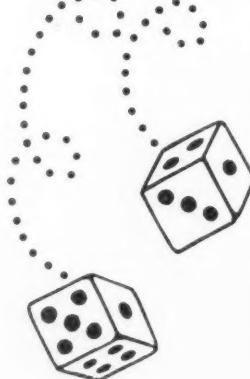
An Isaacson Hydraulic Trac-Doxer building road in shallow earth and rock.
Tough going—where down pressure proves its worth.

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Tractor Equipment

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Your workmen are your greatest asset! Keep them going all winter with Herman Nelson Portable Heaters. These efficient units provide quick, clean, safe HEAT — where you want it — when you want it — without waste. Jobs go ahead faster, men are able to work better, schedules are more easily met — when Herman Nelson Portable Heaters are protecting against costly shutdowns due to cold. No bigger than a kitchen stove, this unit generates enough heat for three ordinary 5-room houses. And it's all done without smoke, soot or open flame!

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SPACE HEATING of temporary buildings, storage sheds, repair shops, buildings under construction.

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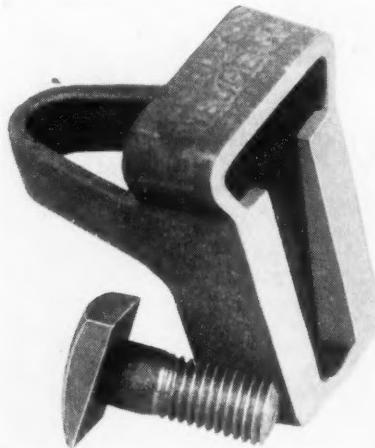
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SINCE 1906 MANUFACTURERS OF QUALITY HEATING AND VENTILATING PRODUCTS

CONCRETE INSERTS — Peerless wedge is powerful insert designed to support in adjustable position shelf angles commonly used to carry veneer or exterior facing of building walls. US436 has $\frac{3}{4}$ -in. wedge casting complete with $1\frac{1}{2}$ -



long askew head bolt, nut and washer. US425 has $\frac{5}{8}$ -in. wedge casting. Special bolt $1\frac{1}{4}$, 2, $2\frac{1}{2}$ or 3 in. long can be supplied from stock. This line of inserts has been acquired from Union Steel Products Co.—**Richmond Screw Anchor Co., Inc.**, 816-838 Liberty Ave., Brooklyn 8, N. Y.

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Traffic Gard LITTLE AIR PILOT

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EMBURY MFG. CO., WARSAW, N.Y.

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CHIEF ENGINEER SAYS OF
MICHIGAN DRAGLINE --**



"Performance has been excellent!"

"The MICHIGAN gives us the flexibility and mobility required in our operations. Even in the short time we have had this machine, we have found so many uses for it that we wonder how we got along without it before. Performance has been excellent and we are looking forward to years of efficient operation."

Wherever you go, you'll find users enthusiastic with praise of MICHIGAN performance, economy, operating ease and time-saving truck mobility. Talk to any MICHIGAN owner and you'll see why so many become "repeat" buyers. See your distributor for details on the entire MICHIGAN line.

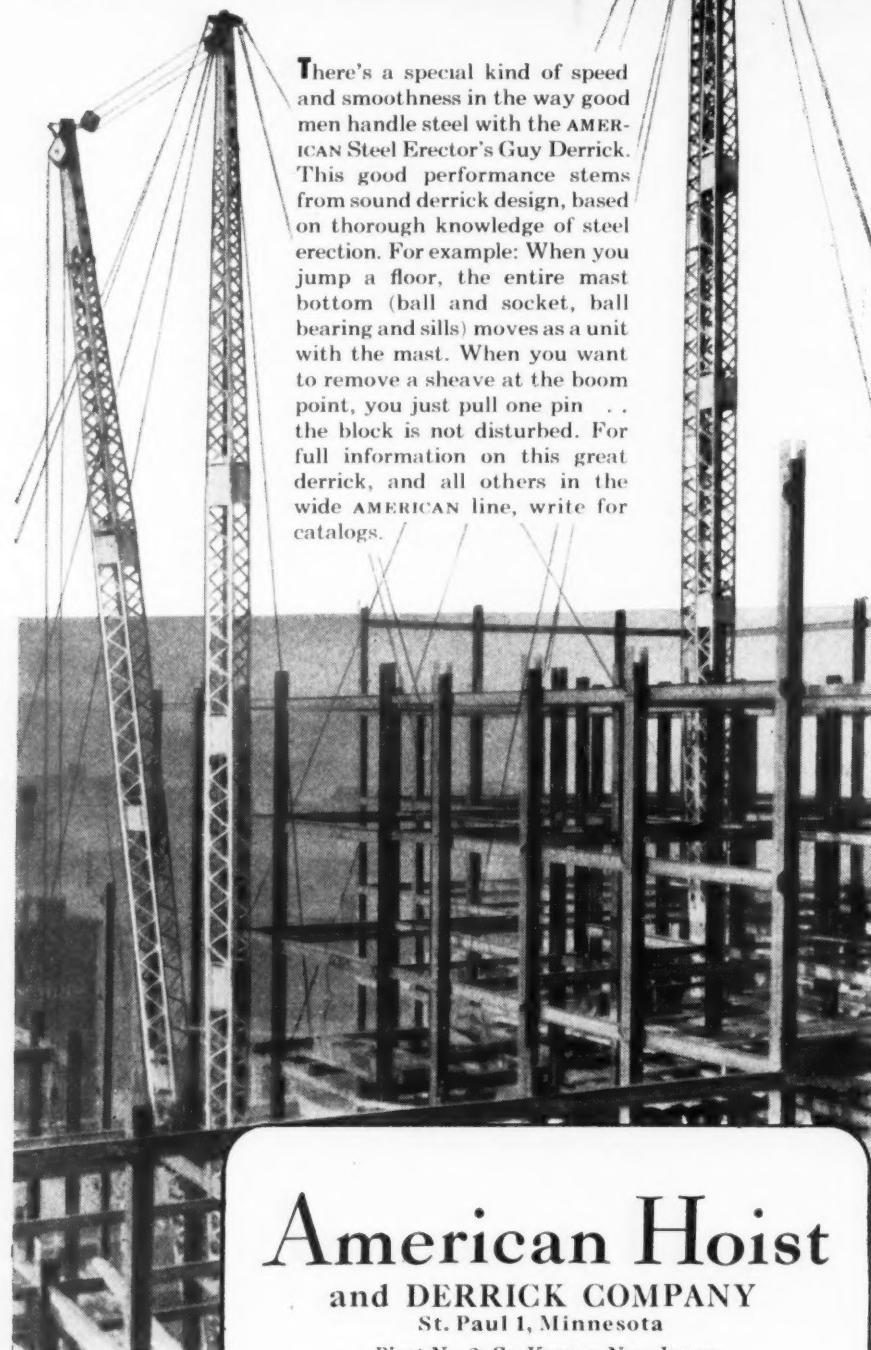
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MERCED IRRIGATION DISTRICT serves 164,000 acres of diversified croplands, maintains 723 miles of canals, over 5,700 structures, 50 miles of drainage channels, 106 drainage wells and a dam and hydroelectric plant on the Merced River.

Skyhooks for Skyscrapers



There's a special kind of speed and smoothness in the way good men handle steel with the AMERICAN Steel Erector's Guy Derrick. This good performance stems from sound derrick design, based on thorough knowledge of steel erection. For example: When you jump a floor, the entire mast bottom (ball and socket, ball bearing and sills) moves as a unit with the mast. When you want to remove a sheave at the boom point, you just pull one pin . . . the block is not disturbed. For full information on this great derrick, and all others in the wide AMERICAN line, write for catalogs.

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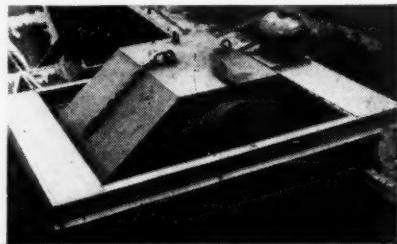
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750

CAR SHAKEOUT—Portable electric-powered device can unload hopper-bottom railroad cars of minerals and other free-flowing bulk materials in as little as 90 sec. without damage to cars or danger to workmen. Weighing only 5



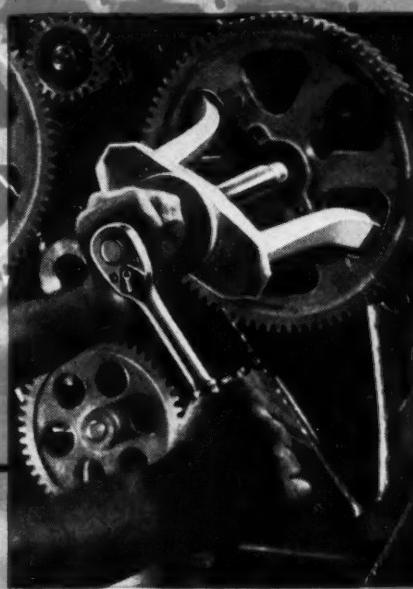
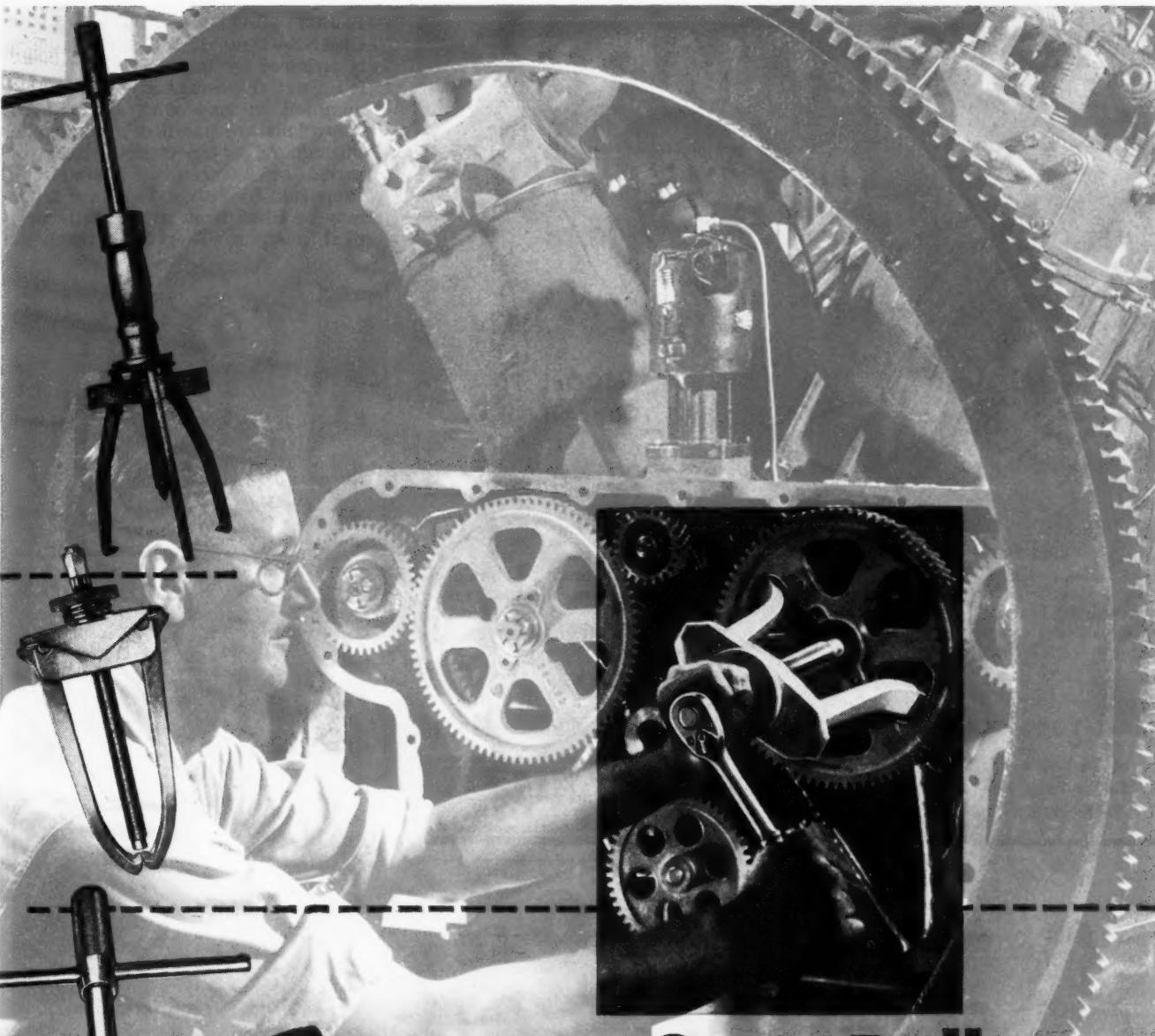
tons, it can be handled by standard electric hoist or yard-crane. It is placed on top of hopper-bottom car, resting on two sides. When current is turned on, it sets up rhythmical seismic action which is transmitted through entire car at frequency of 1000 cycles per minute.—**Robins Conveyors, Inc., Passaic, N. J.**

FIRE-FIGHTING CHEMICAL—Pentrate is compounded of chemical ingredients which are said to give ordinary water increased penetrating and spreading qualities by making water wetter. It is not injurious to metals or wood, having less corrosive effect than water, and can be used effectively with salt water or calcium chloride solutions. Adding 1 percent of Pentrate to water frees surface tension and allows globule to spread out in all directions and cover more area.—**American - LaFrance - Foamite Corp., Elmira, N. Y.**

CONCRETE BLOCK FORK—Need of pallets is eliminated by new completely automatic concrete block fork, which can be attached to any lift truck. Prongs are steel plate individually bolted to lower part of protecting structure, and easily re-

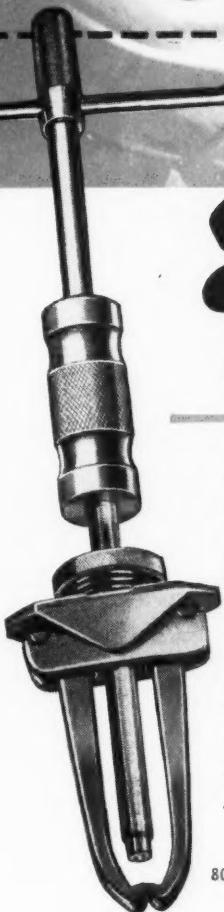


moved. In each is housed rubber gripping mechanism, which is actuated when load is prong-lifted and comes in contact with prong. Fork will handle standard 4-, 6-, 8- and 12-in. blocks. Capacity of fork is limited only by capacity of lift truck on which it is used.—**Schmidgall Mfg. Co., 337 Cass St., Peoria 2, Ill.**



Snap-on Gear Pullers

give you safe, uniform power over entire range



On the testing floor . . . in maintenance operations . . . wherever there is a need for gear pullers, Snap-ons are favored by men who know good tools. There are four definite reasons for this popularity: (1) Snap-ons have more "locking power" for added safety. (2) They give you a "tip-less" pull that prevents binding. (3) You enjoy smooth uniform power for easy pulling over the entire range. (4) Snap-on pullers are available in a wide range of types and sizes.

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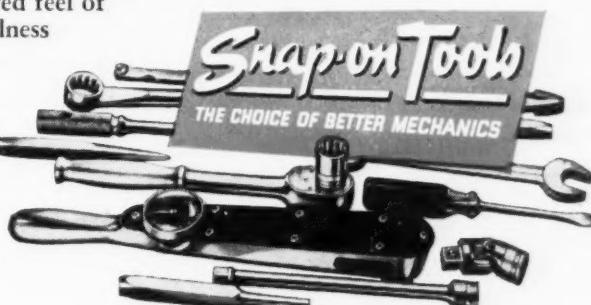
Ask the Snap-on man who calls at your plant for full details on Snap-on gear pullers.

SNAP-ON TOOLS CORPORATION

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International Division: Kenosha, Wis., U.S.A.





Net MORE on Every Job

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MallSaw
REG U.S. PAT. OFF.

MODEL 70
Capacity 2 $\frac{1}{4}$ "

Also 2", 2 $\frac{1}{8}$ " and 4 $\frac{1}{2}$ "
Cutting Capacities.

The faster you build . . . the less the cost . . . the greater your profit . . . when you use a MallSaw. It speeds up multiple cutting of like members, notching rafters, trimming floors and roof decking, cutting form boards, and many other sawing jobs. All MallSaws can be equipped for cutting light gauge metals, tile and concrete and have powerful Universal Motors.

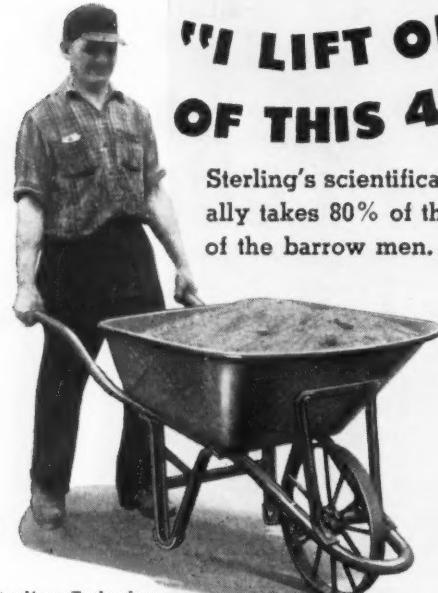
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**"I LIFT ONLY 80 LBS.
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Sterling's scientifically balanced construction actually takes 80% of the load off the arms and backs of the barrow men. With Sterling Wheelbarrows,

crews work faster, make more trips, haul more yardage per day. And quality, all-welded construction keeps Sterlings on the job longer, reduces job costs.

Deliveries of Sterling all-steel, tubular framed barrows are being stepped up as rapidly as the material situation permits.

Sterling Tubular Framed Barrow—all welded, no rivets, lapped at corners. Steel re-inforcing rod around top edge.

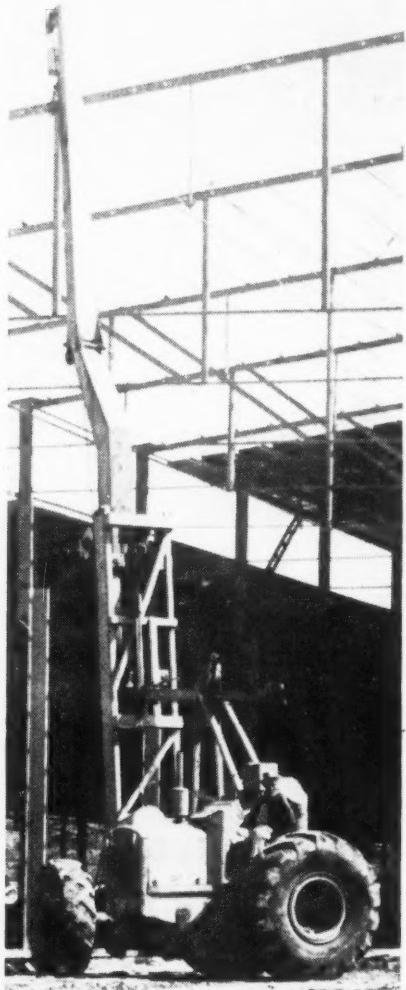
STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Sterling
WHEELBARROWS



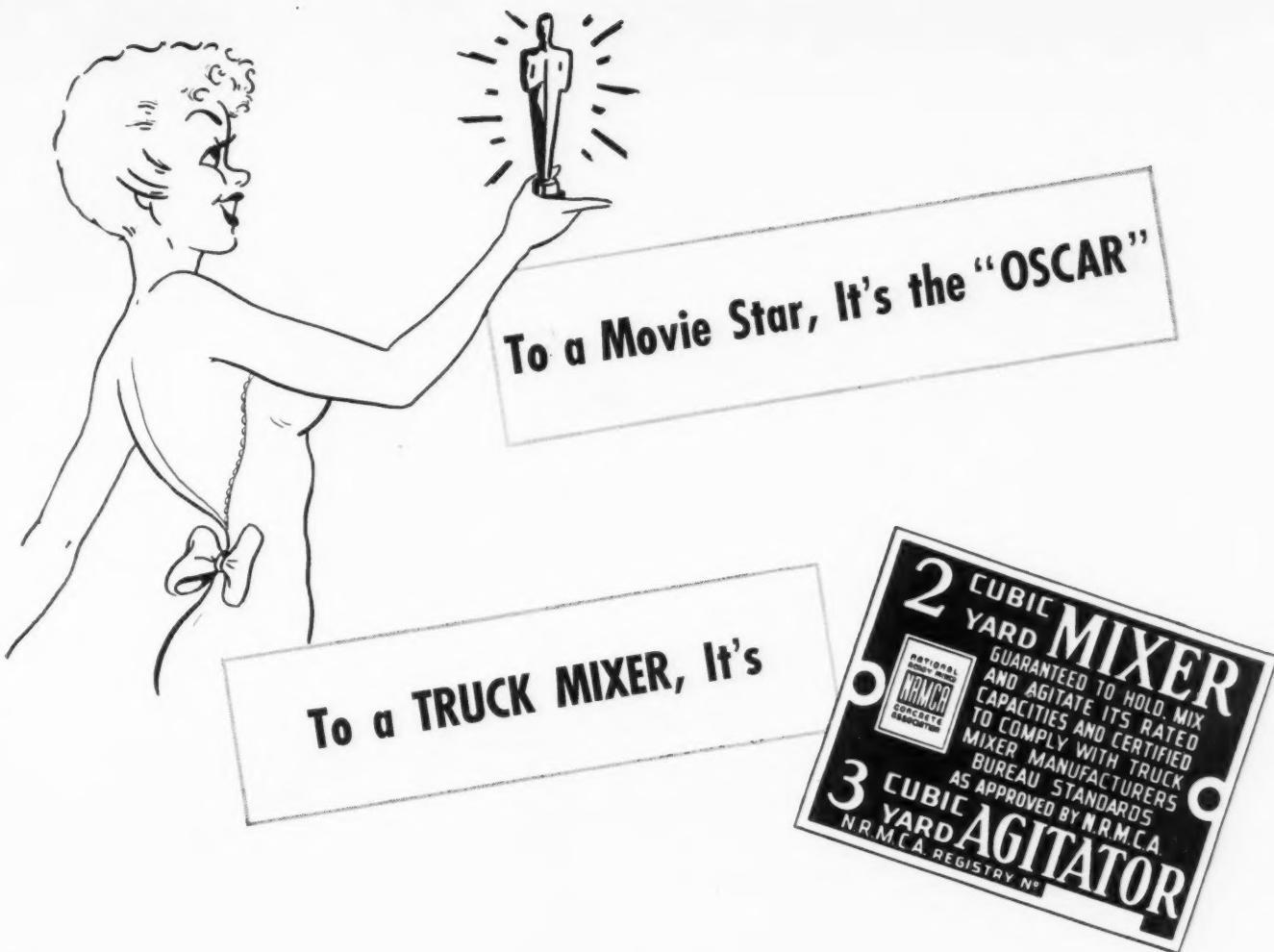
Look for this Mark of
STERLING Quality

ELECTRICALLY - POWERED CRANE—New 15-ton Tournacrane is powered by three electric motors fed by high-capacity generator mounted in line with engine. All operations are handled by one man through finger-tip control. Boom is raised or lowered in boom track supported by rear axle. Boom track may be tilted from its normally vertical position. Therefore, reach of



boom can be adjusted regardless of its vertical position, which is independently controlled. This gives unit long reach and great maneuverability. New unit with C-10 Tournapull has maximum height of lift of approximately 30 ft. and maximum reach of approximately 26 ft. behind rear axle. Lift can easily be increased over 16 ft. more by addition of simple boom extension. Loaded or empty, crane will travel faster than 20 mph., on or off pavement. Both crane and Tournapull weigh about 28,500 lb.—R. G. LeTourneau, Inc., Peoria, Ill.

RADIAL SAW—Flex-Arm portable saw provides complete flexibility and immediate dial setting for any cut at any angle. It is powered by 2-hp. direct drive universal single (Continued on page 132)



To a TRUCK MIXER, It's



To a motion picture star, the Academy Award "Oscar" represents the pinnacle of achievement.

In the field of ready-mix concrete, the award of the Truck Mixer Bureau's rating plate is equally indicative of achievement. For the award of this plate means that the mixer has successfully met the standards set up by the Bureau for your protection. Drum capacity is *exactly* that stated on the plate. It's your protection against "outlaw" sizes . . . your guarantee of accuracy.

Remember, when you see the Bureau rating plate on a truck mixer, you can buy with confidence . . . operate with accuracy.

Truck Mixer Manufacturers Bureau

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YOUR ASSURANCE IT'S DESIGNED RIGHT,
BUILT RIGHT...

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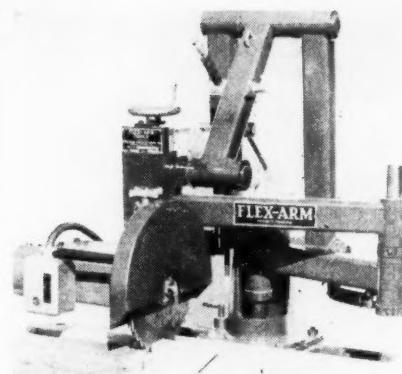
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To users, dealers, and builders of gasoline powered equipment the world over, the trade-mark on a Briggs & Stratton engine is more than a label. It is a seal of quality—backed by the performance record of over 3 MILLION Briggs & Stratton engines during more than 28 years of continuous production. No other manufacturer has built so many 4-cycle air-cooled engines, or has had such long experience in building them. That's why the name BRIGGS & STRATTON stands for all that is best in meeting your most exacting power requirements.



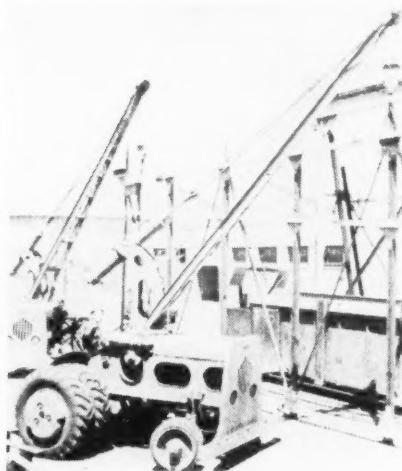
BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U. S. A.



(Continued from page 130)

phase motor, 115 v., 25-60 cycle a.c.-d.c., 5,700-rpm. load speed. Removable rip guard is equipped with anti-kickback dogs and can be lowered to cover blade and shaft. Arm has needle bearings and swings on hardened, precision-ground shaft. Bearings are inclosed and there are no open tracks to wear or clog with dirt. Arm and motor are balanced to prevent forward creep; retracting device complies with safety regulations. Weight complete is 233 lb.—Flex-Arm Mfg. Corp., 401 S. Pasadena Ave., Pasadena 2, Calif.

CRANE—Type U crane has lifting capacity of from 1½ to 4 tons. Enclosed stabilizers permit full front axle movement for smoother traveling, but provide positive support



when swinging load. Rugged front-end construction includes 72-in. axle, heavy steering spindles and reach rod, and heavy cast wheels. Lower ground bearing pressures are provided by 28x10-in. solid cushion tires. All-welded steel boom is raised and lowered by hydraulic cylinder mounted on gantry. All controls—for full-revolving swing, hoist drum and independent boom topping—are located within easy reach of operator. Rig is mounted on Model UTI Minneapolis-Moline tractor, which has rear power take-off and pintle hook draw-bar at rear, so it can be used for other purposes when crane work is slack.—Joshua Hendy Corp., Torrance, Calif.

"PLUG-WELDING"

MAKES THIS A
BETTER DIPPER

- Plug Welded—improved design
- All Manganese Steel Construction—long service life
- Streamlined—easier penetration, loading, dumping
- Lighter Weight—heavier payloads



OVER 2
YARD CAPACITY

AMSCO DIPPER DESIGN PERMITS STRONGER CONSTRUCTION

Patented inter-locking design of Amsco Plug-Welded, All-Manganese Steel Dippers provides for stress-resistant welds . . . eliminates jutting shoulders that offer resistance to penetration, loading, and dumping.

Plugs in one casting fit into sockets in overlapping casting—see Figure 1. Overlapping portions are rabbetted for interengagement—see Figure 2. In both cases groove is formed for receiving weld deposit.

Additional features of Amsco Plug-Welded Dippers include: clean cutting teeth—rigidly locked in place, easily replaced; correctly contoured lip-shaped for easy penetration, full loading; flared body—tapers out slightly to door for positive, complete discharge of material.

MADE OF "THE TOUGHEST STEEL KNOWN"

The use of manganese steel throughout, plus this new all-welded design, assures the maximum in durability for a light-weight dipper.

Impact that fractures other metals work-hardens the surface of manganese steel without affecting toughness of the body metal. The surface of "the toughest steel known" takes on a "plow-share" polish that resists abrasion and assures smoother penetration and clean dumping.

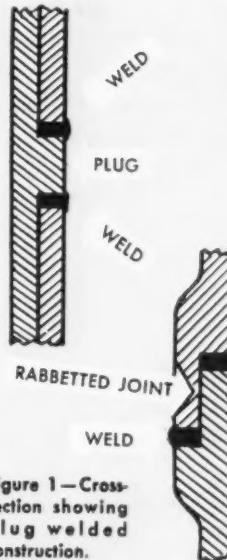


Figure 1—Cross-section showing plug welded construction.

Figure 2—Cross-section showing rabbetted overlap.

AMERICAN

Brake Shoe

COMPANY

AMERICAN MANGANESE STEEL DIVISION

CHICAGO HEIGHTS, ILL.

Foundries at Chicago Heights, Ill., New Castle, Del., Denver, Colo., Oakland, Calif., Los Angeles, Calif., St. Louis, Mo.
Offices in principal cities. In Canada: Joliette Steel Limited, Joliette, Que.



New!

STOPS MOISTURE FROM FALLING INTO TRACTOR EXHAUST . . Just slip the "RAINCAP" over the open end of your tractor exhaust, and you eliminate forever the danger of moisture falling into the exhaust, injuring your tractor.

No.	O.D. Exhaust	Price
2	2½"	\$1.90
3	2¾"	1.90
4	2½"	1.90
5	2¾"	1.90
5½	2"	1.90
6	1½"	1.90
6½	1¾"	1.90
7	2¼"	1.90
8	3"	2.50
9	3½"	2.50
10	3½"	2.50
11	3½"	2.75
12	4"	3.00

THE CAP THAT DOES NOT FORGET TO CLOSE
Completely automatic—the "RAINCAP" is counterbalanced to open when the tractor starts and close when it stops. Rust proof—made of cast aluminum—can be installed in two minutes. F.O.B. Waterloo, Iowa. Write Dept. CM.

- Immediate delivery
- Liberal Dealer Discount.



WATERLOO FOUNDRY CO., WATERLOO, IOWA



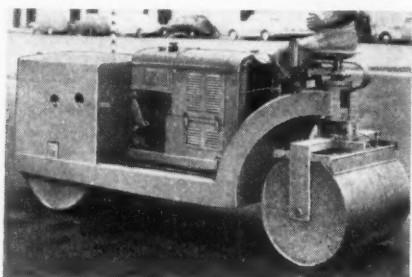
Exclusive features, expert design and superior construction characterize Owen buckets. Long life with dependable service has resulted wherever Owens have been put to work.

The latest catalog is now available. You'll doubtless want to look it over, keeping your current excavating, material handling and dredging equipment demands in mind. Write for the catalog TODAY.

The OWEN BUCKET CO. 6020 BREAKWATER AVE. CLEVELAND, OHIO. BRANCHES: New York, Philadelphia, Chicago, Berkeley, Calif.



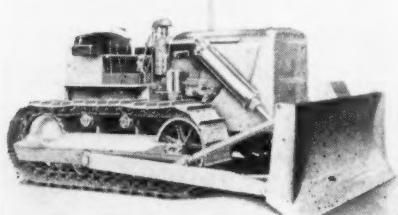
TANDEM ROLLER—This 3- to 4-ton, 36-in. wide compaction roller compacts within 1½ in. of left edge of frame. Wheel base is 7 ft. 10 in. Unimpaired vision of steering roller is provided. Brake horsepower of 27.8 is furnished by Allis-Chalmers,



Hercules or Continental engine at 1,800 rpm. The 3/4x6-in. steel frame is securely braced by five additional steel cross members and steel deck, providing perfect gear shifting and shaft alignment.—Wheeler Roller Division, Shaw Sales & Service Co., 5100 Anaheim-Telegraph Rd., Los Angeles 22, Calif.

ANTI-RUST PAINT—Rustrem (Rust Remedy) anti-rust paint is now available in aluminum as well as in black. This new paint can be applied right over rust without brushing or scraping. It is reputed to immediately penetrate rust layer, render it inactive and seal surface against further rusting. It has high resistance to chemical action and immunity to climatic changes and is recommended for use under water, in salt water, or in locations where dampness and moisture are ever present. Rustrem aluminum can be painted over with any high quality paint or enamel.—Speco, Inc., 3142 Superior Ave., Cleveland, Ohio.

HYDRAULIC CONTROLLED BULLDOZERS—Designed exclusively for use with Caterpillar diesel D8, D7, D6 and D4 track-type tractors, four new bulldozers are matched

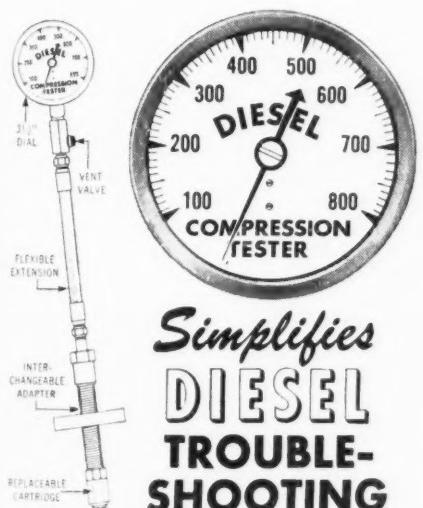


in quality and capacity to power of tractors for which they are designated. They are offered in addition to the cable controlled bulldozers for D8, D7 and D6 models.—Caterpillar Tractor Co., Peoria 8, Ill.

CENTRIFUGAL PUMPS—Overall housings for self-priming centrifugal pumps protect engine as well as pump from weather and dirt. Side panels give instant access to all operating controls. "Inherent"



priming action is combined with "jet" priming. Replaceable liners or seal rings, "Lubri-Seal" which is accessible for inspection, self-cleaning shell design, and open-type impellers which are adjustable for wear are other features.—Jaeger Machine Co., Columbus 16, Ohio.



Simplifies DIESEL TROUBLE- SHOOTING

No single factor of Diesel operation is more important than compression pressure. That's why troubleshooting begins with a check of compression of all cylinders. Model YUF Diesel Compression Tester illustrated has been designed to meet all field and shop needs for an instrument that can take hard use yet give reliable, accurate readings on any make of Diesel engine.

Attachment of tester is by means of interchangeable adapter which takes place of fuel injector. In addition to a "universal adapter" which serves more than 50 makes and types of Diesels, we have a complete line of special adapters for practically every commonly-used Diesel engine. Write for a copy of descriptive Leaflet 605.

ATTENTION! Distributors: Diesel equipment and accessory jobbers are invited to write for information about attractive distribution proposition.

BACHARACH INDUSTRIAL INSTRUMENT CO.
7000 BENNETT STREET, PITTSBURGH 8, PA.

"INFERNO"

**THE STEAM HOSE
FOR THOSE HEAVY DUTY
JOBS ...**

Sizes: $\frac{1}{2}$ " to $2\frac{1}{2}$ ".
Maximum Lengths of 50'

Pile driving, under conditions that would quickly reveal weaknesses in ordinary hose, demonstrates the exceptional strength and stamina of "Inferno." Recommended for pressures up to 200 lbs. and super-heat steam temperatures up to 400°F. A Goodall "Standard of Quality" product, backed by years of reliable service for all heavy duty steam hose applications.

OTHER GOODALL PRODUCTS FOR CONTRACTORS

Air, water, hydraulic, grouting, jet, suction and concrete placing hose; dredge sleeves; transmission, conveyor, elevator, grader and mucker belts; waterproof clothing, boots and shoes. Made to specifications that assure long, economical service.

Contact Our Nearest Branch for Complete Details and Prices.

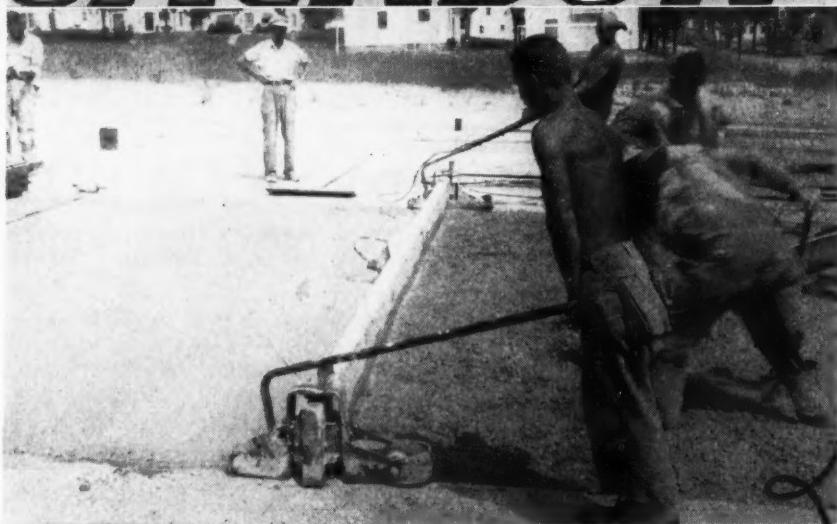


GOODALL RUBBER CO., INC.

THE GOODALL-WHITEHEAD COMPANIES

Philadelphia • Trenton • New York • Boston • Pittsburgh • Chicago • St. Paul • Los Angeles
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JACKSON MUNICIPAL PAVING UNIT



Knocks the Socks off PAVING COSTS!

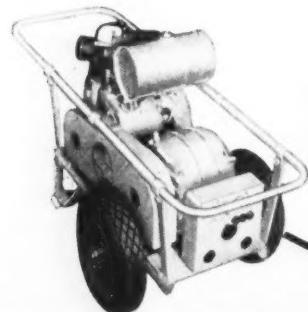
This revolutionary new development in Municipal Paving Units has definitely proved that it can place perfectly upwards of 65 cubic yards of concrete in a single hour!

FURTHERMORE, IT EMPLOYS

THE ONLY SCREED THAT WILL:

1. Undercut at side forms,
2. Roll back for second pass.
3. Strike-off crowns, both regular and inverted.
4. Permit operators to work from front, rear or sides.

In addition, the screed has such a strong tendency to propel itself in the forward direction that only small effort is necessary to strike-off stiff mixes of concrete. Manholes and storm sewers are no handicap due to the fact the screed does not reciprocate. Does an excellent job of vibrating concrete in slab depths up to 10 inches. Can be used to great advantage on any slab width from 6' on up to any practicable width. For radically reduced costs and far greater production, by all means write for complete details of this remarkable paving unit RIGHT NOW!



MODEL M-1 POWER PLANT

furnished with Model SC200 Screed. Capacity: 1.25 K.V.A. Generates both single phase and 3-phase 110 Volt 60 Cycle AC. Also ideal for operating lights, vibrators and power tools.

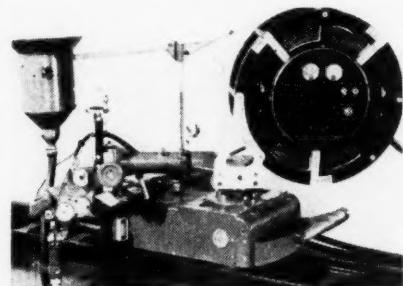
ELECTRIC TAMPER & EQUIPMENT CO.
LUDINGTON MICHIGAN

The COMPLETE UNIT CONSISTS OF:

1 The Model SC200 Screed (for slabs up to 16' wide) or Model SC202 (for slab widths from 16' and up) — activated by the famous JACKSON Vibratory motor. Light weight, easily transported — quickly converted from one slab width to another.

2 One of our famous Portable Power Plants which provide a wide range of vibratory frequencies thus assuring perfect placement of any concrete mix usually specified. These husky plants are Wisconsin engine powered and have permanent magnet generators which require no adjustment or maintenance.

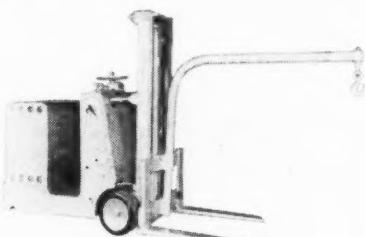
PORTABLE WELDING MACHINE
—Built specially for welding light-gage sheet and light plate by Union-melt process, DS-37 welding machine is small and weighs only 190 lb. Unionmelt process is that of welding electrically beneath layer of granulated mineral composition



without visible arc. Machine will butt-weld, in single pass, material from 16 gage to $\frac{3}{4}$ in. thick. It will also make, in single pass, positioned fillet welds with legs measuring $\frac{1}{8}$ to $\frac{3}{4}$ in.; non-positioned fillet welds with legs measuring $\frac{1}{8}$ to $\frac{3}{8}$ in.; and plug welds in materials $\frac{1}{4}$ to $1\frac{1}{4}$ in. thick. Welding currents up to 1,200 amp. can be applied.—Linde Air Products Co., 30 E. 42nd St., New York 17, N. Y.

ELECTRIC CALCULATOR—New 10-key calculator is unusually compact, yet designed to solve most complex problems in addition, subtraction, multiplication, and division. No trained operator or extensive knowledge of mathematics is necessary. Features are fast multiplication with automatic spacing to left or right; automatic division; and speedy subtraction and addition. Visible dials show all three problem factors in line of vision. Each problem is proved as it is computed.—R. C. Allen Business Machines, Inc., 678 Front Ave., N. W., Grand Rapids, 4, Mich.

CRANE ARM ATTACHMENT—Constructed of tubular steel, new crane arm is available in lengths from 24 in. to 6 ft. in 6-in. increments. It will fit all models of Lewis-Shepard power fork trucks. Ma-

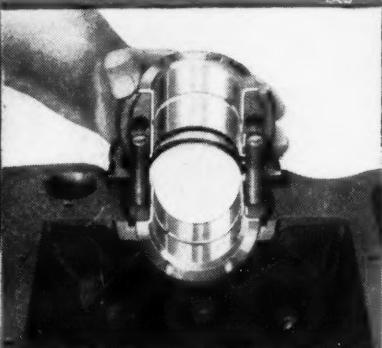


terial is picked up with sling attached to rugged crane hook. After load is secure it can be moved by crane arm or placed on pallet or skid platform for transportation by fork-lift truck.—Lewis-Shepard Products, Inc., 301 Walnut St., Watertown 72, Mass.

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"BACKBONE" the Basis of Ford Engine ENDURANCE!



Precision! Ford bearings, being precision-dimensioned inside and outside, are quickly replaceable without removing the crankshaft. The steel-backed bearing liners of special Ford anti-friction alloy slip easily into place without need for further fitting.

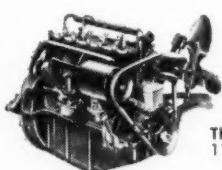


The massive crankshaft pictured is where stand-up stamina starts in one of the most famous engines ever designed—the Ford V-8.

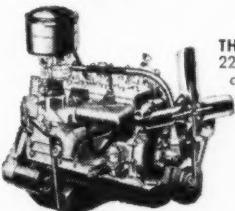
It's a remarkable example of engineering—a simple, uniform-grained casting of special Ford alloy steel. It weighs 69.2 pounds. Its six heavy counterweights are integral parts of it; thus they lend added strength as well as balance. Its generous main and connecting rod journal areas are precision-ground to an accuracy of within a thousandth of an inch. Each shaft is heat-treated for hardness and toughness and individually balanced to within 0.2 ounce-inch statically and 0.3 ounce-inch dynamically. Its shortness (only 26.03 inches) and its massive design give it vast resistance to bending strains and torsional vibration.

Crankshafts of the 4-cylinder and 6-cylinder Ford engines are of the same superior material, designed and machined in similar manner, to the same precision standards.

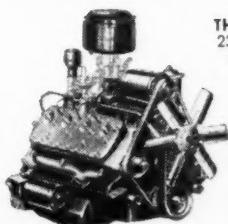
It's engineering excellence such as this, through and through, that's responsible for the time-proved endurance of Ford engines. It makes them a valued asset in any engine-powered equipment. Write for detailed data.



THE 40-H.P. FOUR
119.5 cubic inches
displacement



THE 90-H.P. SIX
226 cubic inches
displacement



THE 100-H.P. V-8
239 cubic inches
displacement

Ford engines are used to power—

Agricultural Machinery • Orchard Equipment • Air Compressors • Road and Construction Machinery • Derricks and Hoists • Electric Generating Plants • Arc Welders • Fire-Fighting Equipment • Industrial Tractors • Lumber and Saw Mill Equipment • Oil Field Equipment • Pumps • Railway Motor Cars • and many other applications.

FORD MOTOR COMPANY

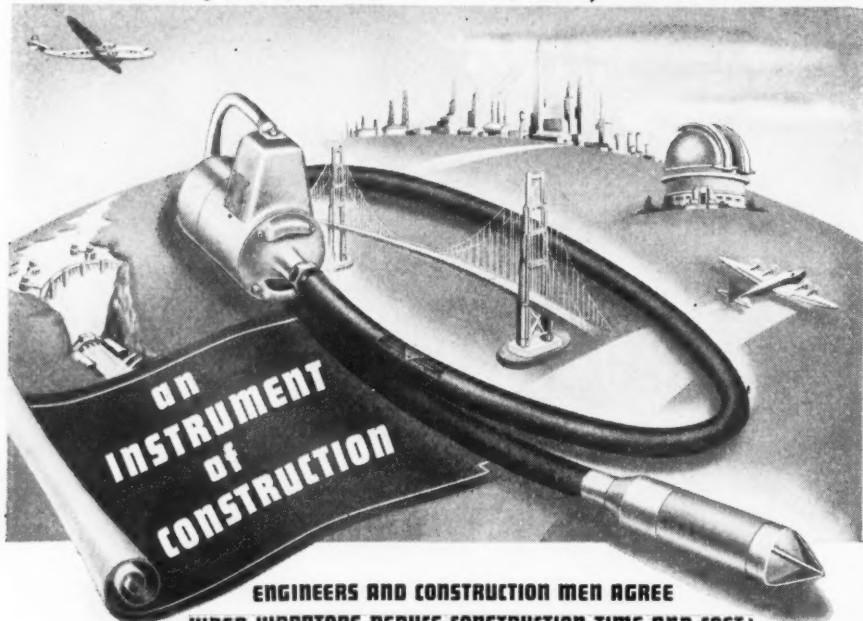
Industrial and Marine Engine Department

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FORD-BUILT ENGINES

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED

The World's Largest Projects have Proved the Merit of **VIBER VIBRATORS**



ENGINEERS AND CONSTRUCTION MEN AGREE
VIBER VIBRATORS REDUCE CONSTRUCTION TIME AND COST!

Important facts and specifications on VIBER Vibrators furnished upon request.

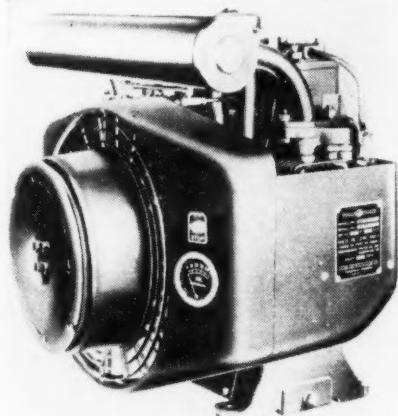


ORIGINATORS OF INTERNAL CONCRETE VIBRATION

726 South Flower, Burbank, California

To obtain maximum density and strength in concrete, it is important that the entire mix be given internal high speed vibration. This reduces voids, honeycombs, shrinking and cracking, also placing and compaction time. Built to withstand the strain on heavy construction jobs, the VIBER Vibrator makes practical the use of drier mixes. The interchangeability of VIBER units permits quick conversion to changing job conditions, eliminating delays, and the light weight portability offers easy one-man operation.

LIGHTWEIGHT ENGINE — Twin-cylinder aluminum engine is available in two sizes. Small engine weighs 72 lb. and fits into space 14x17x17 and has 3.1 to 6.7-hp.

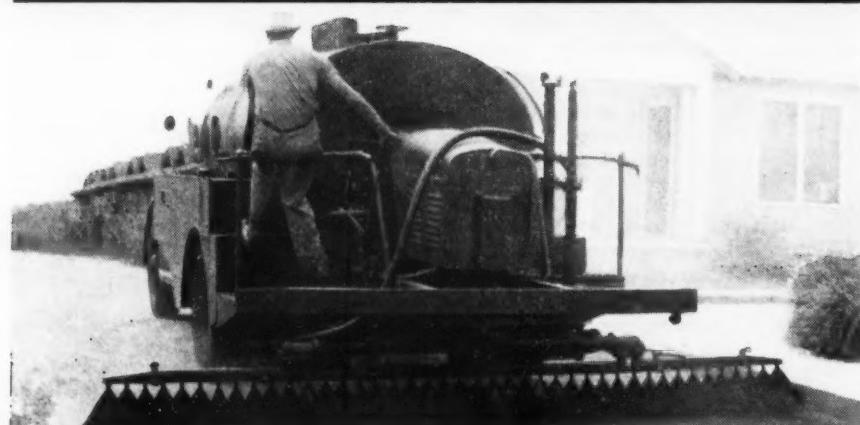


range, while larger unit weighs 98 lb. and has range from 6.5 to 10.1 hp. Either size can be equipped with specially designed starter-generator.—**Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.**

FINGER GUARD—In addition to protecting fingers and thumb on face and sides, new pattern guard extends leather protection over end of finger, with no seam or joint at finger tip. Seams on sides are well on top of fingers and out of wearing zone. Elastic webbing on back assures comfortably tight, cool, non-slip protection. It is made in three weights of leather and four sizes.—**Industrial Gloves Co., Danville, Ill.**

ETNYRE

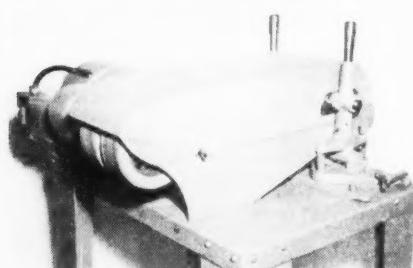
"Black-Topper"
BITUMINOUS DISTRIBUTORS



ACCURATE...DEPENDABLE...ECONOMICAL—Reduce labor costs, save time, minimize maintenance with an Etnyre "Black-Topper". Covers roads up to 24 feet wide in one trip...low-cost operation...accurate and dependable. See your Etnyre dealer or write us today for complete details.

E. D. ETNYRE & CO., Oregon, Illinois

BENCH GRINDER—New model DBS double belt bench grinder has heavy-duty driveshaft that mounts two sturdy 7-in. dia. by 2½-in. wide resilient contact rolls located side by side and only inches apart. Each



contact roll is aligned with idler adjustable for abrasive belt tension, tacking and lining up with contact roll, which provides for use of two endless metal cutting abrasive belts 2½ in. wide by 60-in. circumference. Result is two-station grinder.—**Porter-Cable Machine Co., Syracuse, N. Y.**

wins
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space
-hp.

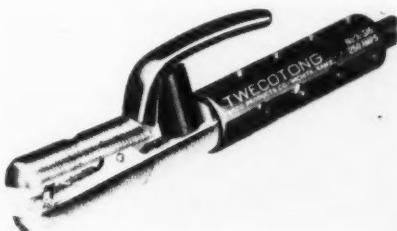
RADIAL SAW—Ball-bearing roller head of new radial saw allows blade to move smoothly and evenly into work. Ram-type arm, moving



through roller head, frees work table for shifting of material and gives operator clean, unobstructed view of all layout marks. To change from cutoff to rip requires about 3 sec.—**Construction Machinery Sales Co., Waterloo, Iowa.**

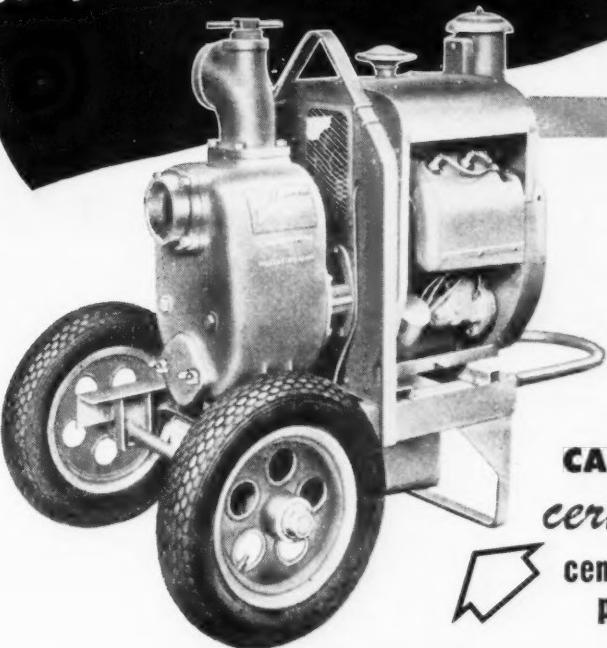
CONVEYOR SYSTEM—Portable power conveyor system can be set up or disassembled quickly to handle loads up to 100 lb. per ft. Built around basic power unit made up of standard 10-ft. straight section powered by 1/2-hp. slow-speed motor, system includes such accessories as 90-deg. power turns, automatic power conveyor intersection, piling conveyor base, power feed attachment and gravity take-off attachment.—**Food Machinery Corp., Material Handling Division, Riverside, Calif.**

WELDING ELECTRODE HOLDER—New A-316 Twecotong electrode holder features light weight, compactness and ease of operation with 95-lb. bite on 3/16-in. electrode. Tip and body insulation is molded laminated glass cloth bakelite using patented tubular-keyed design. Insu-



lated spring is neoprene covered. Cable connection is simple clamp, plus socket for soldering when desired. Specifications are: Capacity 1 1/16-in. through 3/16-in. electrodes; 250 amp.; weight 18 oz.; length 9 in.; palm span 2 3/4 in.—**Tweco Products Co., P. O. Box 666, Wichita 1, Kan.**

Talk about Performance!
CARVER PUMPS
really deliver when jobs are tough



CARVER
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centrifugal
pumps

If you want a pump that primes lightning fast, that handles oceans of water at exceptionally high efficiency, and stands up easily under toughest operating conditions . . . the pump you want is a CARVER Certified Centrifugal Pump.

In every way they'll give you better pumping performance on the tough jobs—and the easy ones—because their modern streamlined design and construction gives you all these outstanding advantages:

- ★ High Capacity at high suction lift.
- ★ High Efficiency at high pressures and at slow speeds.
- ★ Non-Recirculating—no priming gadgets.
- ★ Life-Time Seal—wearing surfaces are almost diamond-hard.
- ★ Fewer Working Parts because of simple design.
- ★ Non-Clogging—streamlined design.
- ★ Performance of each pump is *certified*.

Capacities from
3000 to 200,000
G.P.H. Sizes
1 1/2" to 10". Ask
for Bulletin 100.
Carver Pump
Co., Muscatine,
Iowa.

CARVER
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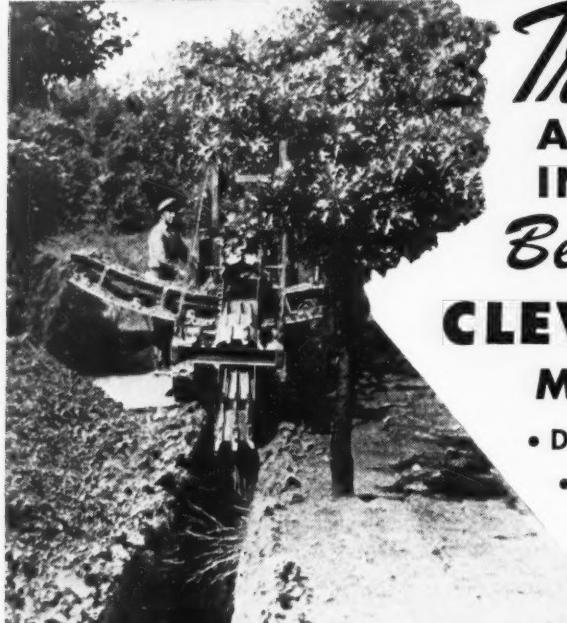
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*Trenchers
ARE ALWAYS
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Because*

CLEVELANDS

MEAN:

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- Low Operating Cost
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The
CLEVELAND TRENCHER CO.
20100 ST. CLAIR AVENUE CLEVELAND 7, OHIO

New HEAVY-DUTY ELECTRIC PLANT

5000 WATTS

Only 272 lbs!

5CK-115M \$545⁰⁰
FOB MINNEAPOLIS

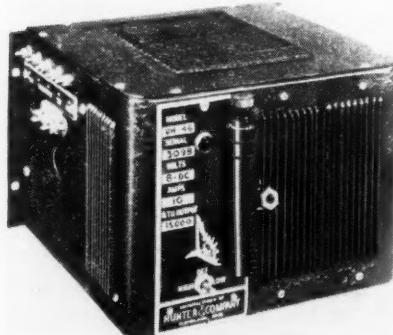
• Large capacity, compact design, and lightweight aluminum construction are combined in this new, rugged, portable electric plant. Easily carried by two men. Powered by Onan 10 HP horizontally-opposed, two-cylinder, 4-cycle, air-cooled engine. Unusual operating economy. Shipped complete, equipped with four-receptacle outlet box and mounted in tubular-steel guard frame.



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ONAN ELECTRIC PLANTS

TRUCK CAB HEATER—Fully automatic gasoline burning heater for heating and ventilation of truck cabs is 7x10x10 in. in size and operates independently of engine. It

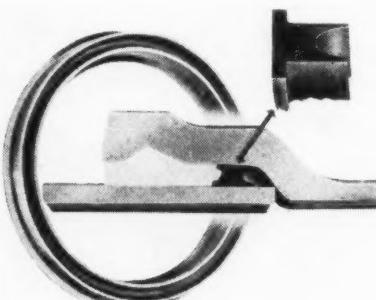


is spark ignited and thermostatically controlled. Fresh air is supplied by air inlet tube that runs from heater to radiator grille. New heater can be equipped to operate when engine is not running. Some models are adapted to engine preheating.—**Hunter & Co., 1550 E. 17th St., Cleveland 14, Ohio.**

ALUMINUM NAILS AND STAPLES

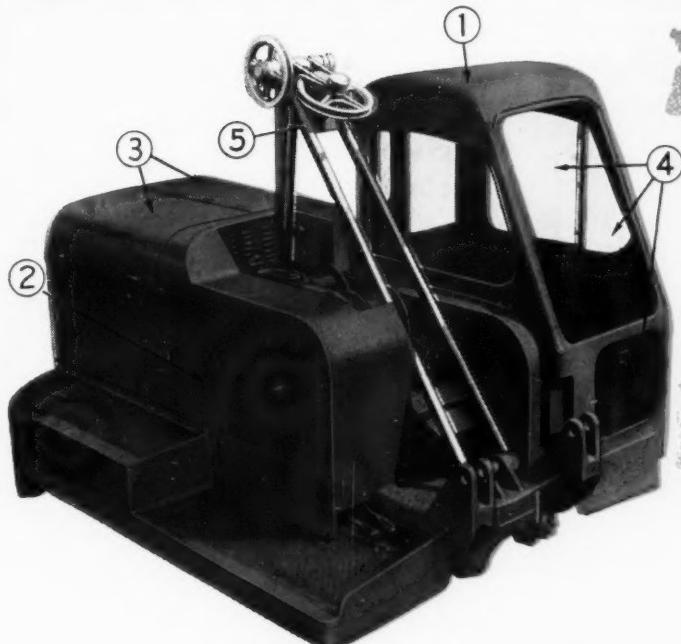
—Nails are available in sizes 3d to 40d. Staples are available in 9-gage, 1 and 1½-in. sizes. They can be used in same applications, in same types and sizes, as steel nails and staples. Aluminum roofing nails up to 9 gage are available with neoprene washers. Also available are shingle, box, plaster board, asbestos shingle and siding nails.—**Nichols Wire & Steel Co., Davenport, Iowa.**

RUBBER RING—Water-lock ring, new self-adjusting, self-locking rubber ring packing for pouring wet or dry bell and spigot cast iron pipe joints, can be used with any joint compound and installed quickly



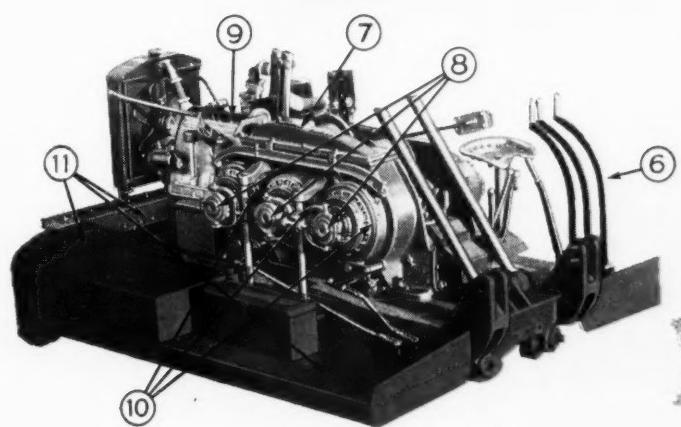
without cutting or fitting. It is hydrostatically designed to increase its sealing action automatically from pressure in line. Without compound, it will hold 40 to 60 lb of pressure. Because ring is non-porous, it cannot be a culture point for bacteria or other contaminating elements.—**Smith-Blair, Inc., South San Francisco, Calif.**

Look into UNIT!



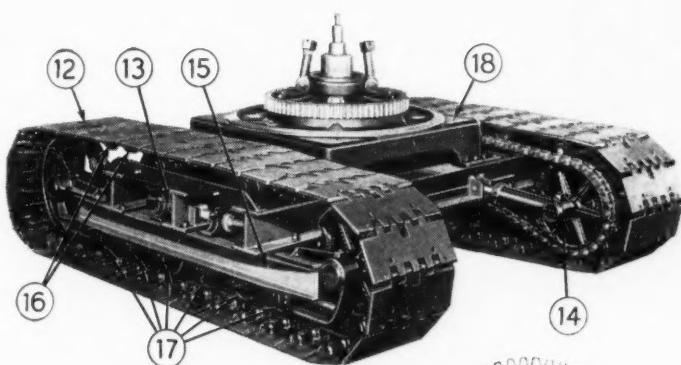
FULL VISION CAB

1. Streamlined to the minute in design . . . operator can see in ALL directions . . . clear visibility around a complete 360° circle, without sacrificing weight, capacity, or headroom.
2. Sliding side panels provide accessibility to motor and clutches.
3. Easily lifted top hood covers . . . locked from within the cab.
4. Shatter-proof Safety Glass used throughout the entire cab.
5. A Frame front legs and end connections are one-piece drop forgings.



MAIN MACHINERY

6. Curved operating levers . . . for easy operation and control.
7. One-piece cast gear case completely encloses all gears and shafts in a constant flow of oil . . . Positive protection for all moving parts. Bored for perfect alignment by machine designed specifically for this accurate operation . . . misalignment is impossible.
8. Heat-treated alloy steel gears and shafts are involute splined. No keys to replace . . . no worn-out keyways. Large diameter shafts with short spans between bearings . . . minimizes deflection and bending . . . reduces bearing replacement.
9. Gas or Diesel engines are mounted in straight line with main machinery. Worm driven power take-off . . . silent, efficient, and compact.
10. All operating clutches are disc type . . . interchangeable . . . simple adjustment . . . mounted on high-speed counter-shafts instead of directly to drum shafts . . . smoother operation and longer life.
11. Turntable, Platforms, and Counterweight . . . These three important members are perfectly aligned, forming a single rigid unit that provides extra resistance to shocks and strains.



LOWER STRUCTURE

12. Multiple hinged shoes maintain alignment . . . minimize wear of shoes and tumblers.
13. Single adjusting screw for adjusting tread belt and drive chain enclosed in grease, free from dirt, rust, or outside damage.
14. One-piece end bearings with added outboard bearings maintain perfect and permanent alignment of drive shaft and end roller shaft.
15. Husky trussed frame . . . reinforced by one-piece end castings.
16. Drive Sprocket guides . . . prevent treads from jumping off if operating too loose.
17. Idler rollers are drop forged alloy steel . . . manganese bronze bushed . . . Alemite lubrication.
18. Heavily ribbed and flanged lower frame (carbody) of annealed alloy steel . . . roller track cast integral with body.

Automatic Traction Brakes are another exclusive UNIT feature! A friction type locking device for both crawlers . . . self-engaged by spring action . . . automatically released when power is applied. LOOK INTO UNIT . . . write today for catalogs and information.

1/2 and 3/4 YD. EXCAVATORS * * * 5 and 10 TON CRANES

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for PRICE and DELIVERY
or See Your Dealer**

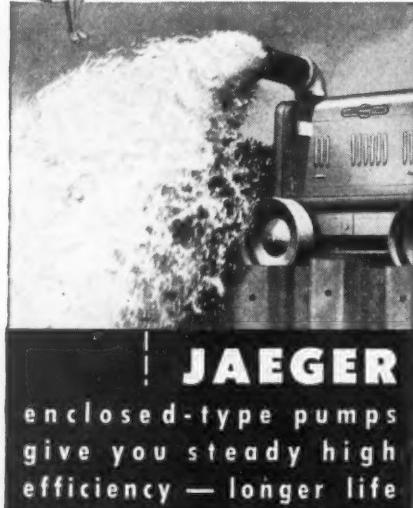


UNIT CRANE & SHOVEL CORP.

WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U.S.A.
4-5226-1P-C

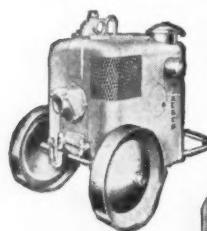


**Here's how
to handle
water—**

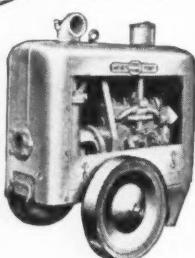


JAEGER
enclosed-type pumps
give you steady high
efficiency — longer life

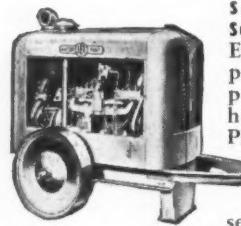
To a better engineered, more amply powered, conservatively rated line of pumps, Jaeger has added all-weather protection of all heavy duty models of 2" to 10" size — for sustained efficiency of pump and engine, extra hours of smooth, dependable performance, plus easy accessibility at all times.



2" and 3" Heavy Duty: Most rugged small pumps built. Conservatively rated @ 10,000 and 20,000 g.p.h.



4" to 10" Portables: Compact, extra powerful units of 40,000 to 240,000 g.p.h. rating and exceptional air capacity.



Self-Priming Super-Jet Pump: Extremely compact, yet outperforms old, heavy types. Pressures to 250 lbs.; 90 h.p. engine. Only 30 seconds to prime @ 20 ft.

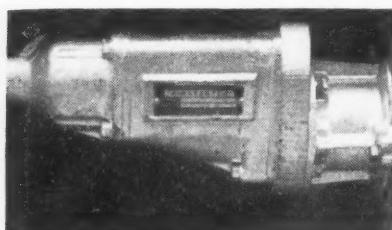
Only Jaeger Offers All These
Inherent priming action plus "jet" priming — doubly sure and fast . . . long-life "Lubri-Seal," accessible for inspection . . . self-cleaning shell design . . . replaceable liners or seal rings . . . Every pump tested and certified for performance.

Sold, Serviced in 128 Cities

THE JAEGER MACHINE CO.
Main Office, Factory, Columbus 16, Ohio
8 E. 48th St. 226 N. LaSalle St.
NEW YORK 17, N. Y. CHICAGO 1, ILL.
235-38 Martin Bldg., BIRMINGHAM 1, ALA.

TROWELS—New products are made of genuine 18-8 austenitic stainless steel which is sheared across grain for maximum tensile strength. Rivets are eliminated by Shotweld construction. Trowels are electrically passified after fabrication and are hand-ground and precision balanced. They have hardwood handles, protected where necessary with baked synthetics.—**Metex Corp., Mt. Vernon, N. Y.**

COMPRESSED AIR ENGINE STARTERS—New line of "Air-starters" will fit practically any make or model of multi-cylinder engine normally using electric starting. Available in sizes and specifications for any engine, they replace



conventional electric starter motor without any modifications of engine. In addition to reduced fire hazard, they eliminate costly maintenance

**Worthington-Ransome
Blue Brute Distributors**

See ad on page 36 for list of
equipment in each line

Worthington-Ransome Distributors

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Ariz., Phoenix, Lee Redman Equipment Co.
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Colo., Denver, Mountain Region Supply Co.
Colo., Denver, Power Equipment Co.
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Fla., Gainesville Constr. Equipment & Supply
Co., Inc.
Fla., Miami, Allied Equip., Inc.
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Tampa, Epperson & Company

Ga., Atlanta Tractor & Machinery Company

Ida., Boise, Olson Manufacturing Co.

Ill., Chicago, Chicago Construction Equip. Co.

Ill., Chicago, Thomas Hoist Co.

Ill., Chicago, J. A. Roche

Iowa, Cedar Rapids, McNall Mach. & Supply
Corp.

Kansas, Topeka, M. B. Salisbury Co.

Ky., Harlan, Croushorn, Equip. & Supply Co.

Louisville, Williams Tractor Co.

Maine, S. Portland, N. A. Burkitt, Inc.

Mich., Muskegon, Lakeshore Mach. & Supply Co.

Mich., Detroit, W. H. Anderson, Co., Inc.

Minn., Minneapolis, Philipp-Murphy Equip. Co.

Mass., Cambridge, Field Machy. Co.

Mass., West Springfield, E. F. Edson Co., Inc.

Md., Baltimore Paving Supply & Equip. Co.

Md., Salisbury Paving Supply & Equip. Co.

Miss., Jackson, Jackson Road Equip. Co.

Mo., Clayton, The Howard Corporation

Mo., Kansas City, Mach. & Supplies Co.

St. Louis, W. H. Reaves

Montana, Billings, Interstate Truck & Equip. Co.

Helena, Caird Eng. Works

Montana, Missoula, Miller Machinery Co.

Nevada, Elko, C. W. Paul Hardware and Machy
Co.

N. Hampshire, Manchester, R. C. Hazleton Co
Inc.

N. J., No. Bergen, American Air Comp. Corp.

N. M., Albuquerque, Bud Fisher Co.

Roswell, Smith Machy. Co.

N. Y., Albany, Milton-Hale Machinery Co.

New York, Hodge & Hammond, Inc.

New York, Railroad Materials Corp.

Syracuse, Milton-Hale Mach. Co.

N. C., High Point, Smith Equip. Co.

N. D., Fargo, Smith Commercial Body Works.

Inc.

Ohio, Cincinnati, Carroll-Edwards & Co.

Dayton, Carroll-Edwards & Co.

Ohio, Toledo, The Kilecorse Machy. Co.

Oklahoma, Oklahoma City, Tattan-Douglas Equip. Co.

Oregon, Portland, Andrews Machinery

Pa., Wilkes-Barre, Ensminger & Co.

Mechanicsburg, Amer. Equip. Corp.

Philadelphia, Metalweld, Inc.

S. C., Columbia, Smith Equipment Co.

Tenn., Chattanooga, Dempster Bros., Inc.

Knoxville, Dempster Bros., Inc.

Memphis, Hamilton Tractor Co.

Nashville, Dempster Bros., Inc.

Tex., Amarillo, T. W. Carpenter Equip. Co.

Dallas, Shaw Equip. Co.

Texas, Houston, So. Texas Equip. Co., Inc.

San Antonio, Patten Machy. Co.

Tyler, D. M. McClure Equip. Co.

Utah, Salt Lake City, J. K. Wheeler Mach. Co.

Vt., Barre, A. M. Flanders, Inc.

Va., Richmond, Highway Machy. and Supply Co.

W. Va., South Charleston, Allied Equip. Co.

Wash. D. C., Paving Supply & Equip. Co.

Wash., Seattle, Star Machy. Co.

Wisc., Milwaukee, Drott Tractor Co., Inc.

Ransome Distributors

La., New Orleans, Ole K. Olson Co.

N. Y., Buffalo, Murray Equip. Co.

N. Y., Rochester, B-G Equip. Co.

O., Cleveland, H. B. Fuller Equip. Co.

Pa., Pittsburgh, Arrow Supply Company

Worthington Distributors

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Mich., Flint, Grandsen-Hall & Co.

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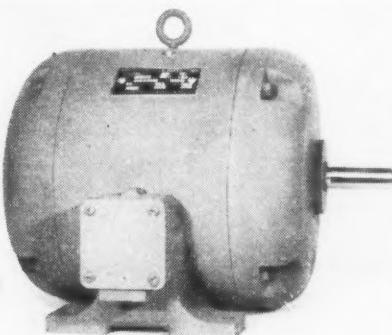
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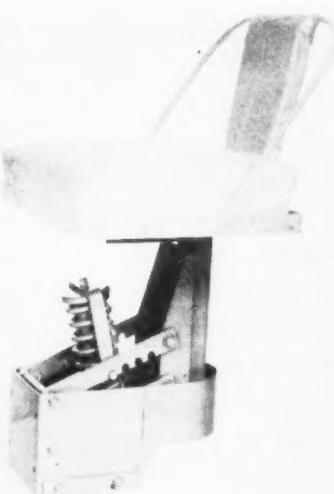
of storage batteries and their necessary charging apparatus and provide reserve power and fast cranking speeds.—Bethlehem Supply Co. of California, P. O. Box 3128 Terminal Annex, Los Angeles 54, Calif.

THREE-PHASE MOTORS—Totally inclosed three-phase motors are available in sizes of 1½, 2 and 3 hp. Squirrel-cage rotor of rolled sheet copper bars is equipped with Normal-Hoffman grease-sealed, cartridge-

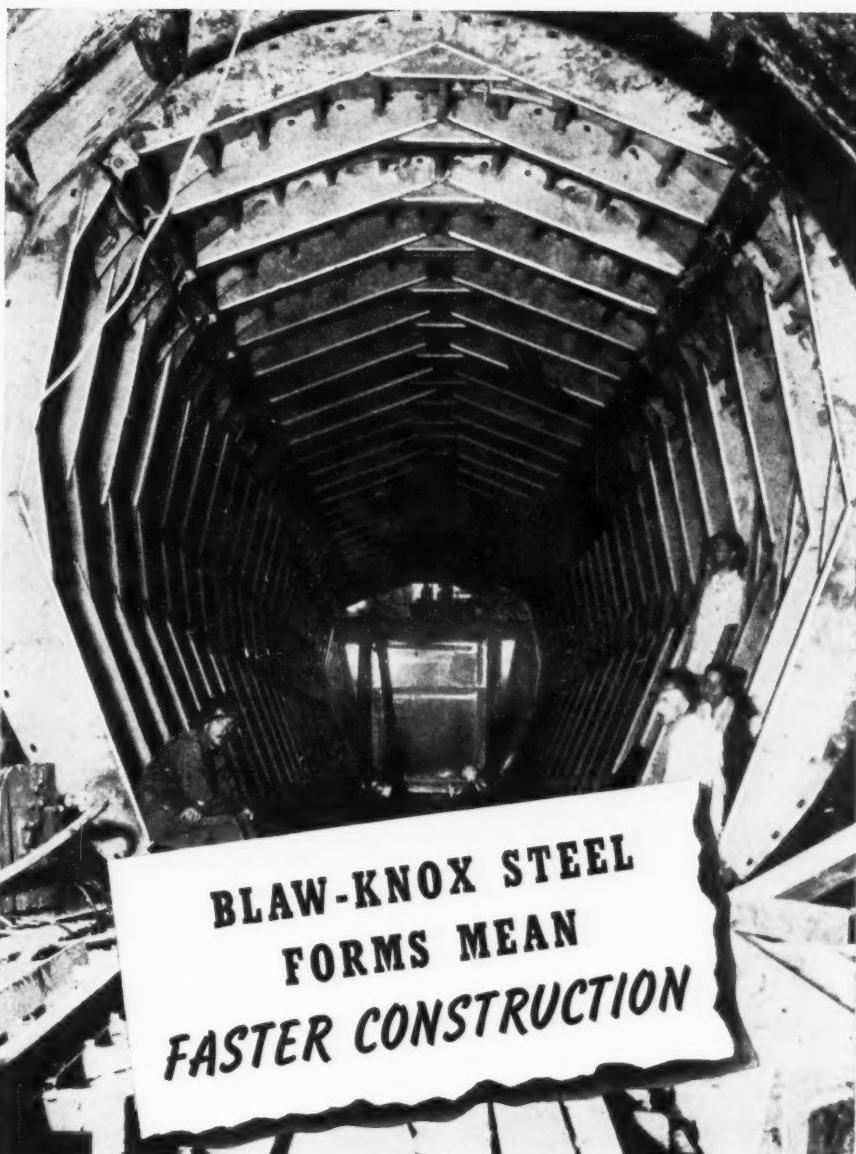


type bearings. Holes in mounting feet are spaced in accordance with N.E.M.A. Special cast iron outlet box threaded for proper size conduit is mounted on side of each motor. Frame and endbells are of cast iron with lifting ring.—Kato Engineering Co., Mankato, Minn.

TRACTOR SEAT SUPPORT—Flow-Ting, hydraulic type seat support with weight adjusting features, combines hydraulic shock absorber built inside soft coil spring. This design provides two-way action whereby coil spring goes down easily without impact and shock absorber



retards return action of spring. Patented device regulates leverage applied to hydraulic piston. By setting adjusting bar in any of four notches, proper tension is maintained for weight of any person, from 75 to 275 lb. Another feature
(Continued on page 145)



Sound engineering, rugged construction and a reputation for smooth practical performance is the unbeatable combination which Blaw-Knox steel forms give to contractors on big jobs.

Whether the job calls for heavy forms on tunnels and conduits, on low retaining walls or high multiple arch dams, Blaw-Knox forms assemble and strip readily, save time and manpower, and generally speed and improve the work.

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Haley, Chisholm and Morris, Charlottesville, Virginia, recently completed on schedule the contract for relocating the Chesapeake and Ohio Railroad track between Staunton, Va. and Clifton Forge, Va. The job involved moving 800,000 yds. of earth and rock at a cost of approximately \$1,500,000.

"THANKS largely to the fine performance of our equipment, we finished this project on schedule in spite of tough operating conditions," says L. S. Coleman, General Superintendent, Haley, Chisholm and Morris. "Gulf products and prompt delivery service were a big factor in keeping our equipment continuously on the job, and delivering top-notch performance."

Here's why so many leading contractors are partial to Gulf products: They have found that

Gulf lubricants provide a higher degree of protection when equipment is pushed to the limit—and that Gulf fuels are of a uniform high quality that insures maximum engine performance. Result: Fewer delays, more efficient operation, lower maintenance costs, and faster progress on the job.

Gulf quality lubricants and fuels are quickly available to you through 1200 warehouses located in 30 states from Maine to New Mexico. Write, wire or phone your nearest Gulf office today.



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(Continued from page 143)

maintains constant seat level regardless of terrain. It is adaptable to all popular makes of tractors.—Knoedler Mfrs., Dept. R-8A, Streator, Ill.

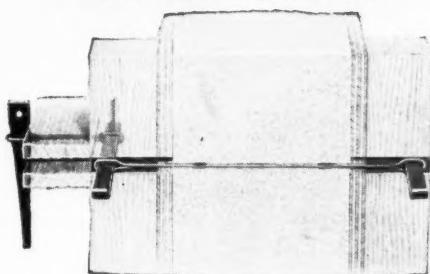
FORK LIFT TRUCK ACCESSORY

—Side shifter permits operator to pick up or deposit unit load in an exact location without repositioning truck. It provides lateral movement



of load, on forks or pallet, to either side. Hydraulically operated through double-acting cylinder, it will move carriage face and forks $3\frac{1}{2}$ in. in either direction. Accessory is designed to operate with standard Towmotor forks or Priester or Schmidgall forks.—Towmotor Corp., Cleveland 10, Ohio.

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There is no nailing . . . no drilling for ties . . . no plugging up old tie holes . . . no spreaders are necessary . . . only one waler per wall . . . ties are placed where the panel is strongest. Simple to erect and dismantle. Guaranteed uniformity throughout the foundation. Symons forms are your answer to simple low cost foundation construction. Write today for complete details and prices . . . also ask about our Column Clamps and Safety Shores.

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The advantages of DIXON hose couplings are demonstrated on every job . . . correct design that assures efficiency in handling and protection for the hose; superior strength and durability, for coupling economy; safe, leakproof connections, to help prevent costly job delays.



"G J-BOSS" Ground Joint Female Coupling,
Style X-34



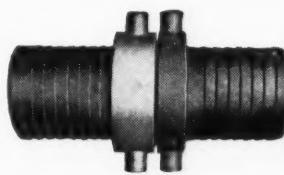
"BOSS" Male Coupling, Style MX-16

"BOSS" HOSE COUPLINGS

Correctly designed, carefully made couplings, with a reputation for safe, reliable service on high or low pressure steam, air, gas and fluid lines. Three styles—"G J-Boss" Style X-34, female, in ground joint construction; "BOSS" Style W-16, female, washer type; "BOSS" Male, Style MX-16. Furnished with powerful "Boss" Offset and Interlocking Clamps, and cadmium plated, Sizes $\frac{1}{4}$ " to 6".



"KING" Single and
Double Bolt Hose
Clamps



"KING" Shank Coupling

For suction and Water Hose. A reliable coupling that is absolutely uniform in quality, threading and dimensions. Quickly connected and disconnected. Made in all malleable iron; malleable iron with brass nut; or all brass. Shanks have deep, clean corrugations. Sizes $\frac{1}{4}$ " to 8", inclusive.



"KING" Combination
Nipple

With "Cor-O-Zig" Corrugations. Has the following advantages over standard iron pipe nipples: Fits straight end of same I.P.T. size; easier to attach because of smoothly rounded spiraled end; holds tighter under clamp pressure because zig-zag corrugations provide two-way gripping surface. Sizes $\frac{1}{2}$ " to 10".



"DIXON" Washer Type Air
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Strong, safe, economical . . . for rock drilling and other air hose service. Furnished with oil treated leather washer and anchored to hose by efficient malleable iron "Dixon" Clamp. Compact and heavy types. Cadmium plated—rustproof. Also made in ground joint washerless design.



"AIR KING"
Quick-Acting, Universal
Hose Coupling

For convenient, low-cost service on drills, hammers, spades and other pneumatic tools. Same size locking heads for all I.P.T. and hose shank sizes within its range. Has patented safety locking arrangement. Bronze or malleable iron, cadmium plated.

Ground joint, WASHERLESS design and built for the real HEAVY DUTY hose jobs in construction, road-building, quarrying, etc. Anchored to hose with tight-gripping "Boss" Interlocking Clamp. Compact and heavy types. Cadmium plated—rustproof. Also available in washer style.

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For tough pulling jobs, there's the Simplex Jenny Center Hole Hydraulic Puller to cut man hours, save time and money. Whatever your Hydraulic Jack or Jenny need, you can find a Simplex to help you get more work done, faster and with greater safety.

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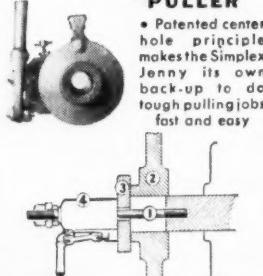
Let Simplex Jacks or Jennys prove themselves on your job. Ask for 30-day free trial of the model you need, without obligation. Simplex Hydraulic Jacks are available in 3, 5, 8, 12, 20, 30, 50 and 100-ton capacities; Jennys in 30, 60, 80 and 100-ton capacities. For free trial, simply state capacity desired and send request on your letterhead to:

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- Patented center hole principle makes the Simplex Jenny its own back-up to do tough pulling jobs fast and easy

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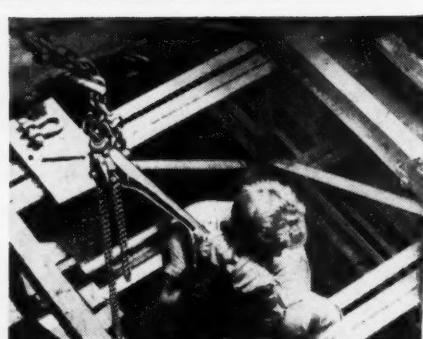
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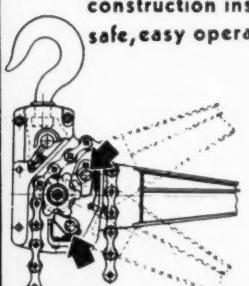
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New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

DEWATERING COAL—(4-p. bulletin) Describes and illustrates Eliptex dewaterizer, giving case histories to demonstrate ability of this method to remove surface moisture from coal and other materials.

—Robins Conveyors Division, Hewitt-Robins, Inc., 270 Passaic Ave., Passaic, N. J.

HAND TOOLS—(Bulletin No. 4728) Describes and illustrates 24 pliers, 12 adjustable wrenches and 6 pipe wrenches.—Plumb Tool Co., 2209B Santa Fe Ave., Los Angeles 54, Calif.

JACKS—(Engineering data bulletin) Describes Simplex jacks for supporting and leveling tanks. Complete specification charts, selection guide data and price listings are included.—Templeton, Kenly & Co., 1020 S. Central Ave., Chicago 44, Ill.

TILE ENGINEERING—(453 - p. handbook) Describes shapes and sizes of structural clay tile, including facing tile, and contains detailed information and recommendations regarding mortar, design and properties of structural tile walls, and design and construction of walls, partitions, footings, foundations, piers and pilasters. Appendix contains estimating tables and specifications for various kinds of tile construction. It is priced at \$4.50, with special price of \$2.50 to registered architects and engineers.—Structural Clay Products Institute, 1756 K St., N.W., Washington 6, D. C.

MARINE DIESEL ENGINES—(28-p. bulletin) Describes and illustrates how diesels are designed and built, with 48 photographs, 8 performance charts and 5 blueprints. Horsepower ratings and specifications are given for all engines, both supercharged and non-supercharged. — Superior Engine Division, National Supply Co., Springfield, Ohio.

CRANES, HOISTS AND TROLLEYS—(8-p. catalog) Describes and illustrates company's entire line of hand-powered and electric cranes, hoists and trolleys.—Conco Engineering Works, Mendota, Ill.

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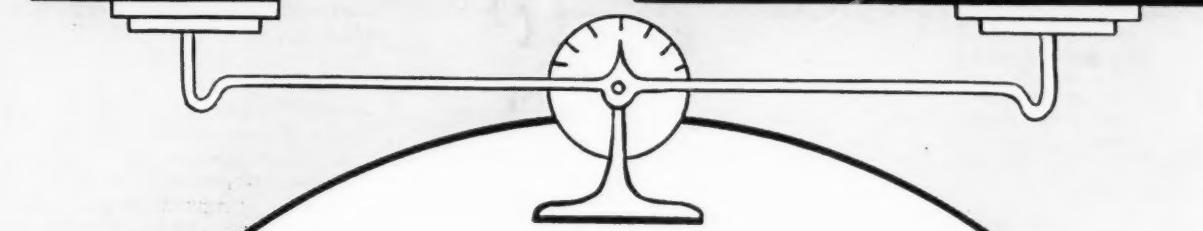
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ONE CU. YD. RATED CAPACITY



The Page AUTOMATIC has always been built large enough to make the carrying capacity *equal* to the rated capacity size. A one cubic yard Page bucket will load and carry one cubic yard of material—but many buckets rated at 1 yd. cannot do it. A bucket with a struck measure of less than 31.8 cu. ft. cannot possibly average a one cu. yd. payload.

Ordinary buckets do not have sufficient allowance for the curved portions and the open end and, therefore, carry as low as $\frac{3}{4}$ or $\frac{1}{2}$ as much material as the rated capacity indicates. That's another reason why lighter weights are claimed for ordinary buckets.

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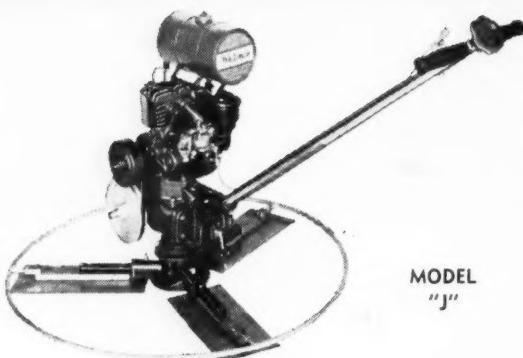
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HIGHWAY CONSTRUCTION—(16-p. booklet) Shows diesel track-type tractors, equipped with bulldozers and scrapers; diesel wheel-type tractors; and diesel motor graders engaged in road work. It also shows diesel engine installations in draglines, shovels, compressors and crushing plants.—Caterpillar Tractor Co., Peoria 8, Ill.

GEAR BOX—(1-p. circular) Describes new Type MG mitre gear box for use in operating controls of valves, doors, steering gears and other mechanical devices and power drives of transmission equipment.—Piezo Manufacturing Corp., 110 E. 42nd St., New York 17, N.Y.

INDUSTRIAL PUMPS—(8-p. bulletin) Features, in picture magazine style, design and construction of Amsco-Nagle ball-bearing Type T industrial pumps, with photographs, diagrams and cross-sectional views.—American Manganese Steel Division, American Brake Shoe Co., Chicago Heights, Ill.

ENGINEERING PROGRESS—(32-p. annual review) Covers all phases of company's activity during 1946, including section on construction and public works.—Allis-Chalmers Manufacturing Co., Box 512, Milwaukee 1, Wis.

CONTROL SWITCH—(12-p. bulletin) Describes Type SB-1 control and transfer switch for opening, closing and transferring low-capacity circuits up to 20 amp. at 600 v. a.c. or d.c. Photographs and exploded views show construction of switch, both for single-stack and tandem units.—General Electric Co., Schenectady, N.Y.

NICKEL ALLOYS—(Handbook and guide) Includes information on nickel, Monel, Inconel and associated alloys, as well as such other alloys as Hastelloys and Illium. Written by Dr. Norman E. Woldman, consulting metallurgical engineer, it reports on properties, heat and corrosion resistance, as well as on modern fabrication and finishing practices.—International Nickel Co., Inc., 67 Wall St., New York 5, N.Y.

TIMBER CONNECTORS—(12-p. booklet) Illustrates and describes installation of split rings and shear plates for wide span roof trusses and other heavy structures, and toothed rings for light built-in structures where power is not available.—Timber Engineering Co., 1319 18th St., N.W., Washington 6, D.C.

ROCK BORING MACHINE—(8-p. booklet) Contains complete descriptions and illustrations of earth and rock boring machines in action, both horizontal and vertical types.—Salem Tool Co., Salem, Ohio.

EARTHMOVING EQUIPMENT—(23x33-in. broadside) Explains in detail and pictures design features built into new self-loading D Tourneau. Large-size, job-action photographs show how it can be used on small yardage projects. Inside spread gives complete specifications on this one-man-operated rig.—R. G. LeTourneau, Inc., Peoria, Ill.

FIRE-RESISTANT CANVAS—(12-p. booklet) Describes Fire Chief treated canvas, including resistance to fire, water, wear, weather and mildew, and shows typical installations in different climates.—Wm. E. Hooper & Sons Co., Juniper & Cherry Sts., Philadelphia, Pa.

METAL FORMING—(64-p. catalog) Illustrates methods and tools for forming metal shapes used in structural and architectural fields. Typical die designs for various shapes are illustrated.—Cincinnati Shaper Co., Cincinnati 25, Ohio.



ARMSTRONG DROP FORGED WRENCHES

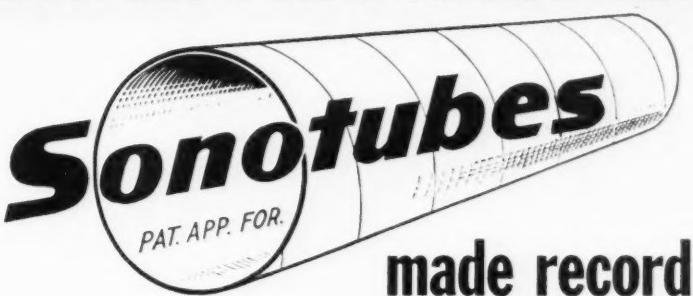
All ARMSTRONG Construction and Structural Wrenches are drop forged from special analysis tool steel, and heat treated. Openings are accurately machined, handles are long and tapered for ease in lining up bolt holes. "Construction" Wrenches in Chrome-Vanadium or Carbon Steel—with 15°, 45° or 90° angle heads with openings of from 7/16" to 2".

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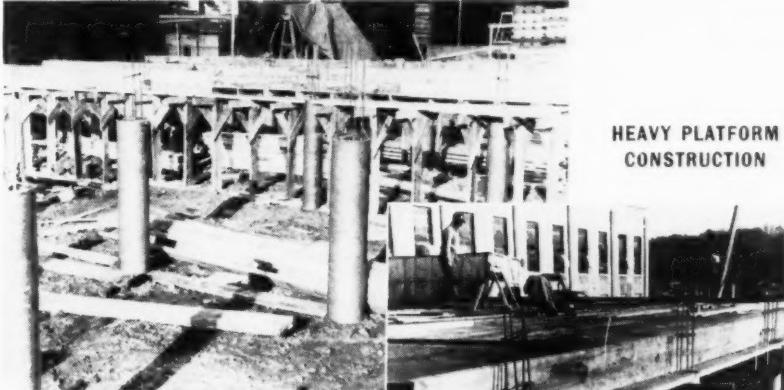
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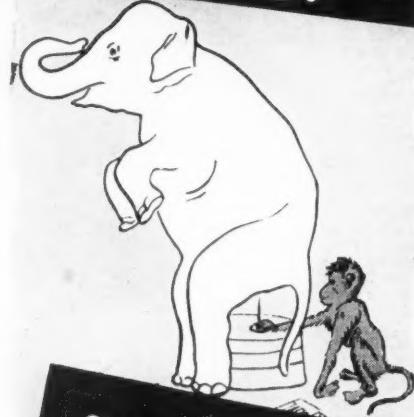
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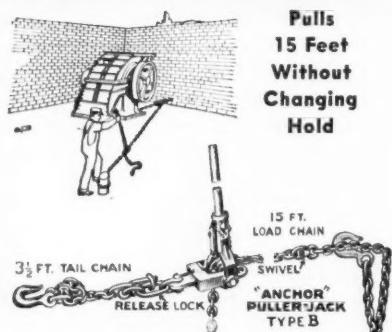
Chicago 12 --- Illinois

AIR CONDITIONING UNITS—(12-p. catalog) Covers two complete lines of Latenaire and Sensaire air conditioning units, including remote and self-contained models of both floor and wall types, as well as duct-type coil. Complete specifications and engineering data are given.—American Coils, Inc., 360 Thomas St., Newark 5, N. J.

BUILDING SAVERS—(16-p. catalog) Covers floor treatments, concrete and mortar admixtures, waterproofing and dampproofing products, paints and protective coatings, caulking compounds, roof coatings and waxes. It gives coverage figures, packaging data and, in several instances, thumbnail application suggestions.—Building Products Division, L. Sonnenborn Sons, Inc., New York 16, N. Y.

LUBRICATING GREASE—(6-p. folder) Covers, in question-and-answer form, new lubricating grease for use on all open gears and bearings. Manufacturer claims that this is closest approach to permanent lubricating medium that has yet been achieved.—Knapp Mills, Inc., 121 Broad St., New York 4, N. Y.

One Man Moves 5 Tons with the ANCHOR Puller-Jack!



Here's a one-man gang that quickly repays its price in labor, time and money saved. Has 3 tons direct pulling power, or 5 tons with sheave block. Pulls 15 feet without changing hold. Can be operated upright, sideways or upside down, with lever pull away from load or toward it. Simple, strong, foolproof. Practically nothing to get out of order. Positive action, always holds. Compact, quick and easy to set up and use. Hundreds of uses for this powerful tool wherever heavy objects must be moved. Order an ANCHOR Puller-Jack today, or write for descriptive catalog.

\$57.50

THE NOLAN COMPANY, Dept. CM, Bowerston, Ohio
Formerly The Mining Safety Device Co.

F.O.B. Bowerston, Ohio. Jack complete with 3 ft. steel tube handle, 15 ft. load chain with slip hook, and release lock. Longer chains available.

**WHY
"Aero-Seal"**
T.M. Reg. U.S. Pat. Off.

WORM DRIVE

HOSE CLAMPS

WILL SAVE YOU MONEY



Patented —
U.S. Pat. Nos.
2,386,629;
2,395,273
Other Pats.
Pending

RUGGED!

Sturdily built. Stainless steel or carbon spring steel. Rust resistant. Mechanically interlocked saddle. Worm gear drive. No loose parts. Vibration-proof. Unaffected by high or low temperatures and pressures. Uniform "squeeze" on hose. Greater band strength.

FASTER TO INSTALL!

Save time. Easily installed. No need to remove hose. Self-locking. Will not collapse thin wall hose.

REDUCE MAINTENANCE COSTS!

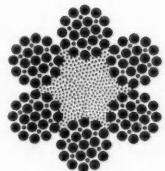
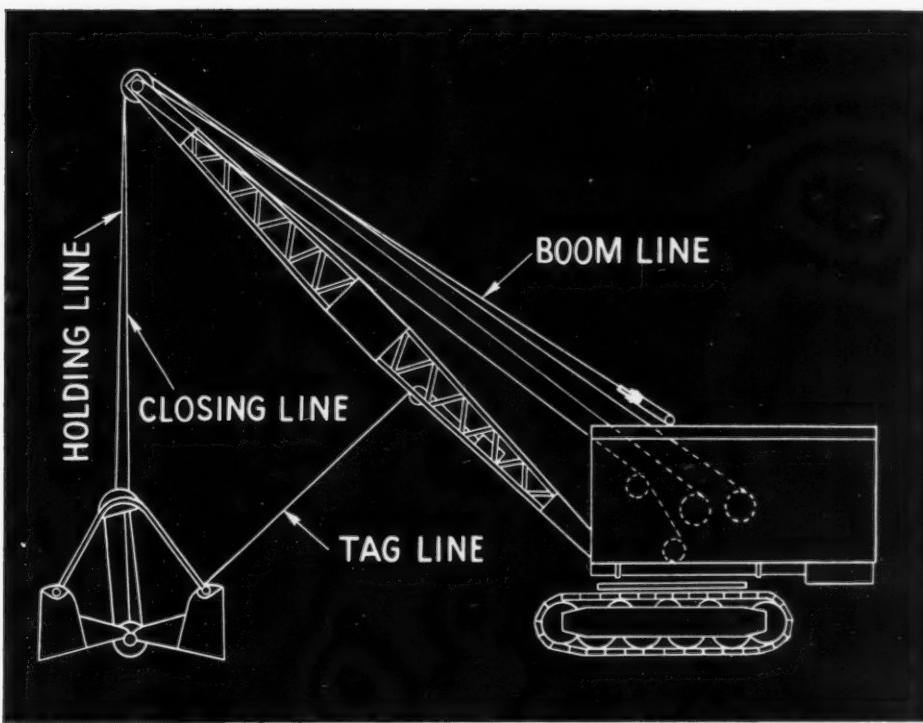
They "stay put". Leak-proof. Extra long take-up. Reduce inventory requirements. Keep equipment on the job. Use them for all air, fuel and coolant lines on trucks, tractors, pumps, mixers, compressors, power shovels, motor graders, etc. Write for FREE SAMPLE. You'll like "Aero-Seal".

BREEZE CORPORATIONS, INC.

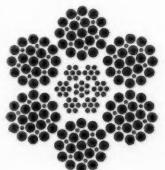
Aircraft Standard Parts Co. Div.
41 South Sixth Street
Newark 7 • New Jersey

Follow
this guide
in buying

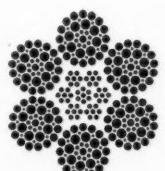
Ropes for Clamshell Cranes



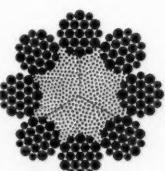
TYPE W
fiber core



TYPE W
independent
wire rope core



6 x 37 TYPE Q
independent
wire rope core



8 x 19 WARRINGTON
fiber core

Each rope on a clamshell crane has a specialized job, and your choice of lines has a direct bearing on rope life and performance. Bethlehem suggests that you use the following as a guide when considering wire rope for clamshells.

HOLDING LINES encounter relatively little wear or crushing. Bethlehem's 6 x 19 Type W Purple Strand with regular lay and fiber core is widely used. Form-Set (preformed) often specified.

CLOSING LINES are often subjected to severe bending and crushing. Good ropes for this service are the 6 x 19 Type W and the 6 x 37, choice depending upon the type of bucket. To help resist crushing, independent wire rope core may be required. We recommend Purple Strand grade, regular lay, Form-Set (preformed).

BOOM LINES are rarely subject to heavy wear. A Purple Strand 6 x 19 Type W rope, regular lay, will do a good job for you here. A fiber core is often used, but independent wire rope core gives added protection against crushing.

TAG LINES need unusual flexibility and elasticity. Generally plow steel rope with regular lay and fiber core is used. 8 x 19 is suggested for small cranes; 6 x 19 Type W for large ones.

If further details are required, ask for the services of a Bethlehem engineer. He'll be glad to help with your wire-rope problems, at no cost to you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation

When you think WIRE ROPE . . . think BETHLEHEM



BREAK CONCRETE AND TAMP BACK FILL

THE

LOW COST WAY!

REPAVE IMMEDIATELY



Junior Model T

**LOWER YOUR TRENCH WORK COSTS MANY TIMES
BY USING RAPID PAVEMENT BREAKER MACHINES**

Write for details, information on other models and prices

R. P. B. CORPORATION

1517 SANTA FE AVENUE

LOS ANGELES 21, CALIF.

**BIGGER PAYLOADS
with WELLMAN
Williams Type
BUCKETS**

• Exclusive features in design and construction make payloads bigger... at lower cost! Weight is balanced, not cumbersome. Extra strength is built into every part with the sturdy welded rolled steel construction pioneered by Wellman, the leader for over fifty years. A type for every service!

THE WELLMAN ENGINEERING COMPANY
7017 CENTRAL AVENUE • CLEVELAND 4, OHIO

**SEND FOR
BULLETIN**



SLURRY PUMP—(16-p. pamphlet)

Contains performance charts showing how to select slurry pump to insure maximum life of wearing parts and describes advanced design of Type R pump.—**Morris Machine Works, Baldwinsville, N. Y.**

SANITARY ENGINEERING EQUIPMENT—(4-p. leaflet)

Previews six units of new equipment: S-7 clarifiers; duo-clarifier; duo-filter; Type M digester; external sludge heater; and Sulzer screenings disintegrator.—**Dorr Co., 570 Lexington Ave., New York 22, N. Y.**

CENTRIFUGAL PUMPS—(4-p. bulletin) Tells of operating advantages and construction features of new line of "Pedrifugal" pedestal-type centrifugal pumps.—**Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.**

PIT, QUARRY, MINE AND BITUMINOUS EQUIPMENT—(Pocket reference booklet) Contains factual data and information on aggregate specifications, belt conveyor capacities, crusher settings, horsepower required for various units of equipment, screen data, weights of materials, horsepower rating of belts, safe loads on beams, conversion tables, keys and keyway data.—**Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn.**

AUTOMATIC OPERATION FOR ELECTRICAL EQUIPMENT—(36-p. booklet)

Explains how Rototrol regulates voltage, speed, current, power, speed and torque, power-factor, and position, and provides stability control and current limiting.—**Westinghouse Electric Corp., 306 Fourth Ave., Box 1017, Pittsburgh 30, Pa.**

RUBBER PACKING—(4-p. folder)

Outlines advantages of use of Flexo-Pac, pioneer rubber packing to be used in place of jute or hemp for yarning bell and spigot joints on cast iron pipe.—**Rice-Chadwick Rubber Co., Killbuck, Ohio**

ANGLING BLADE BULLDOZER—

(8-p. book) Furnishes basic specifications and production features of new cable-controlled angling blade bulldozers, Nos. 8A and 7A. It outlines structural advantages and illustrates, with model and cutaway views, blade C-frame, brace, sheave, and push cup construction, and angling, tilting and lifting adjustments possible.—**Caterpillar Tractor Co., Peoria 8, Ill.**

REAR-DUMP TRUCK—(6-p. folder) Describes Model TD rear-dump Euclid, which has payload capacity of 22 tons and is powered by 275-hp. diesel engine.—**Euclid Road Machinery Co., Cleveland 17, Ohio**

HARD FACING—(New Bulletin) Describes Sprayweld process, new method for hard facing by using metallizing gun and Metco-Weld H, wire composed of powdered hard-facing alloy extruded with plastic binder.—**Metallizing Engineering Co., Inc., Long Island City, N. Y.**

ALL-STEEL WINDOW—(8-p. folder) Describes new type allsteel bedroom window which features in-titting sill vent to protect against drafts, weather and falls.—**Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit 11, Mich.**

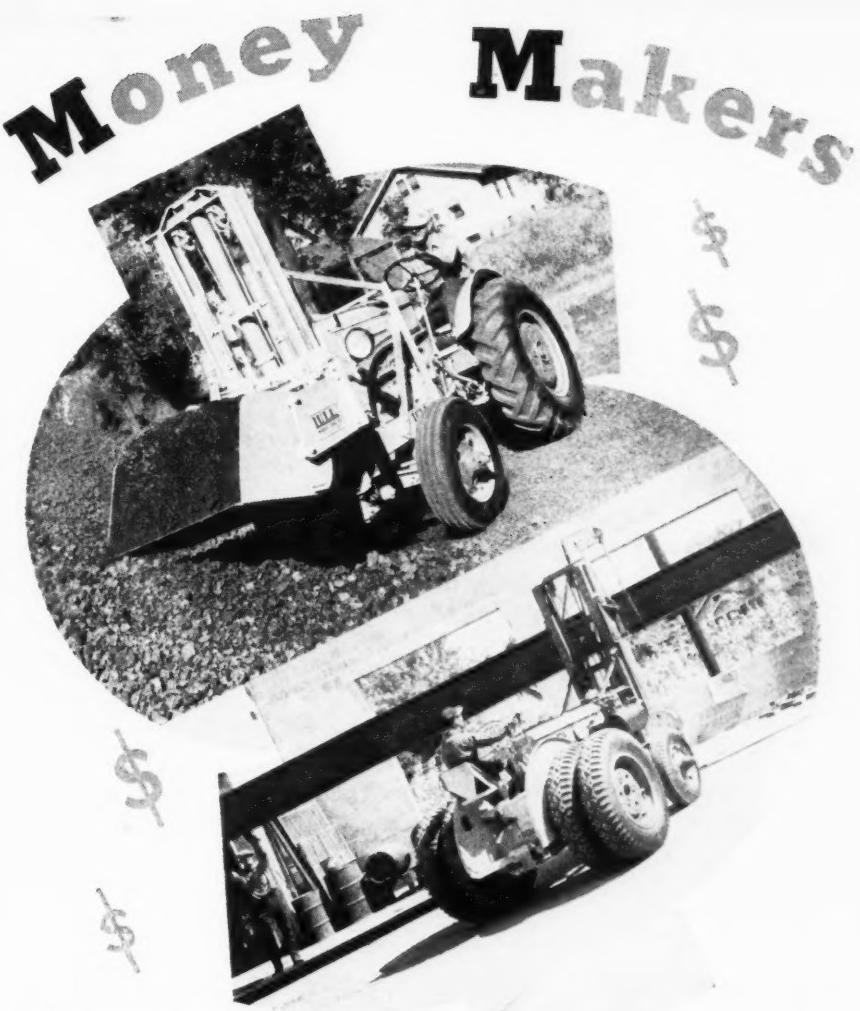
MATERIALS HANDLING—(Illustrated booklet) Shows how to achieve complete coordination of all steps in materials handling at relatively low cost. Specially designed units for most efficient operation of Turner system are illustrated.—**Factory Service Co., 4615 N. 21st St., Milwaukee 9, Wis.**

WATER WELLS—(200-p. handbook) Contains charts, tables and other data pertinent to drilling, testing and operation of water wells. It is compiled and edited by Keith E. Anderson, geologist and engineer, Missouri Geological Survey and Water Resources. Book will be ready for distribution soon and will be sold at cost (estimated at about \$1.50 per copy).—**Missouri Water Well Drillers Association, P. O. Box 250, Rolla, Mo.**

CAR SHAKEOUT—(12-p. booklet) Describes new unit for unloading hopper-bottom cars without manual labor. Reports from owners of this equipment are included.—**Robins Conveyors Division, Hewitt-Robins, Inc., 270 Passaic Ave., Passaic, N. J.**

WALL BREATHING—(20-p. booklet) Contains valuable information on principle of waterproofing and weatherproofing. Disruption of masonry surfaces, problems of building owners and waterproofing methods are described in detail.—**Western Waterproofing Co. of Missouri, Syndicate Trust Bldg., St. Louis 1, Mo.**

DISTANCE MEASUREMENT—(4-p. leaflet) Describes new Minerva Curvimeter for measuring distances on blueprint or plan.—**Herman H. Sticht Co., Inc., 27 Park Place, New York, N. Y.**



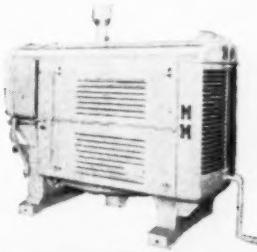
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MM INDUSTRIAL TRACTORS **greater mobility and utility**

MM Industrial Tractors handle heaviest loads *easily, speedily*. Short turning radius, wide range of speeds, and easiest steering ever offered in equipment of this capacity assures *cost-cutting mobility*; efficient attachments for lifting, loading, materials handling, and maintenance work assures *profit-boosting utility*. YOU can cut your costs with *economical, versatile* MM Industrial Tractors.

MM POWER UNITS

Economy, dependability and long life performance is a matter of sound engineering. MM Power Units have it! Eight sizes from 21 H.P. to 242 H.P. are serving industry in a wide variety of applications that call for rugged power units of proved performance.



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POWER IMPLEMENT COMPANY
MINNEAPOLIS 1, MINNESOTA

**NOW Rolled from
Alloy or Mild Steel**



Caine CORR-PLATE

Steel Piling

Rolled from a new steel alloy. Caine Corr-Plate is now 25% stronger and has nearly 100% greater corrosion resistance.

This alloy makes available equal strength and nearly double the life in a 25% lighter piling. Approved by Highway Departments and U. S. Engineers.

Caine Corr-Plate Steel Piling has been used the world over for Foundations, Dams, Retaining Walls, Docks, Levees, Bulkheads, Sewers, Disposal Plants and hundreds of other jobs—it's stronger, lighter, nestable, easy to drive and water tight; can be re-used again and again.

Doubled life and 25% greater strength make Caine Corr-Plate Steel Piling the bargain buy in piling!

NOW, MORE THAN EVER BEFORE . . .

STRONGEST PER POUND WEIGHT

CAINE STEEL COMPANY

STEEL PILING DIVISION, 1820 N. Central Avenue, Chicago 39, Illinois



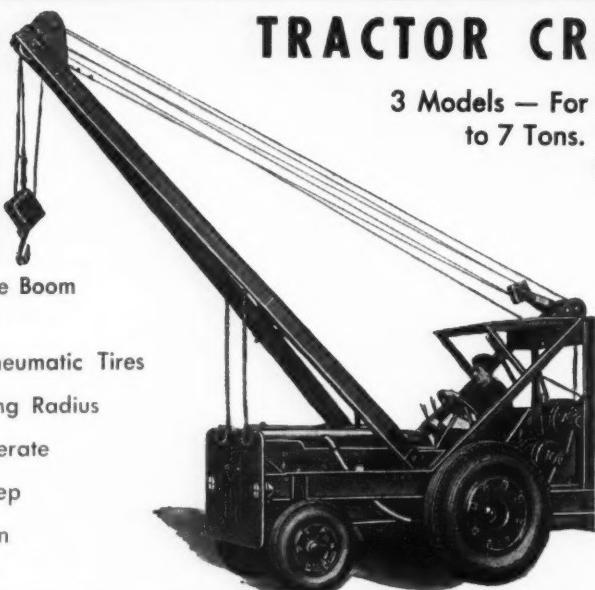
MERCER

"The Name that Carries Weight"

MATERIAL HANDLING EQUIPMENT

TRACTOR CRANES

**3 Models — For Loads Up
to 7 Tons. Write for
literature.**



Special Type Boom

Designed

Solid or Pneumatic Tires

Short Turning Radius

Easy to Operate

Low Up-Keep

Clear Vision

Live Boom

MERCER ENGINEERING WORKS, INC.

Plant: Clifton, N. J.

SALES REPRESENTATIVE

**MERCER-ROBINSON COMPANY, INC.
30 CHURCH ST., NEW YORK 7, N. Y.**

EQUIPMENT MEN and Their Companies

M & F Equipment Co., Albuquerque, N. M., are now New Mexico distributors for the Davey Compressor Co., Kent, Ohio.

L. W. Coffin and **L. W. Whitton** have been elected vice-presidents of the Otis Elevator Co. Mr. Coffin has been general service manager two years, and Mr. Whitton has been manager of operations since last Oct. 1. Both will continue in those posts.

Albert Musschoot, a member of the general engineering staff of Link-Belt Co. at Philadelphia, Pa., has been appointed assistant to the chief engineer at the company's general office, 307 N. Michigan Ave., Chicago 1, Ill.

"A World of Aggregate," a new 40-min. movie photographed in Kodachrome, with music and dialogue has been produced for Iowa Manufacturing Co. of Cedar Rapids, Iowa. It shows the important part played by aggregate—sand, gravel and crushed stone—in all kinds of construction and what this means to the average citizen in his everyday life and to industry in general. Featured in the film are the various types of equipment built by Iowa Manufacturing Co. for producing aggregate and mixing asphalt. Animated drawings in color show how the principal types operate.

A new laboratory devoted exclusively to the study of asphalt and its application has been established by the Shell Oil Co. It is at Wood River, Ill. Technicians are conducting mechanical tests and chemical analyses in order to learn more about the properties and performance characteristics of asphalt.

Clifford N. Peterson has been appointed direct factory representative of the American Hoist & Derrick Co., covering the Pacific Coast area from San Francisco. He is a graduate engineer of the University of Iowa.

John M. Wilkerson has been appointed southern sales manager of the Pennsylvania-Dixie Cement Corp. with headquarters at 1410 Rhodes-Haverty Building, Atlanta, Ga.

what makes the **LS-85** a "SUPER" **3/4 YARD SHOVEL-CRANE?**

You don't "baby" the Link-Belt Speeders—especially the LS-85, with extra power, stamina and endurance built into every detail. Balanced weight, large turn-table, hook rollers and oversize center pin give ground hugging stability, perfect control and extra digging and lifting capacity.

Run your eye down the list of features at the right and you'll understand why the LS-85 has earned the name "Super" 3/4 yard.

Like every Link-Belt Speeder from 3/8 to 3 yard capacity, it is quickly convertible to every conventional front end attachment, for multiple use and multiplied profit.

Independent Rapid Boom Hoist
(Full Boom Radius, Faster Operation,
Safety)

Greater Power
(Heavy duty 97 HP engine)

More Weight for Greater Stability
(44,200 pounds—Diesel)

Greater Lifting Capacity
(30,000 pounds)

Positive, Independent Chain Crowd
(Self-adjusting to all boom angles)

Crawler Frames
(With full length track support)

Power Dipper Trip (Starter & Electric
Lights with gasoline engine)

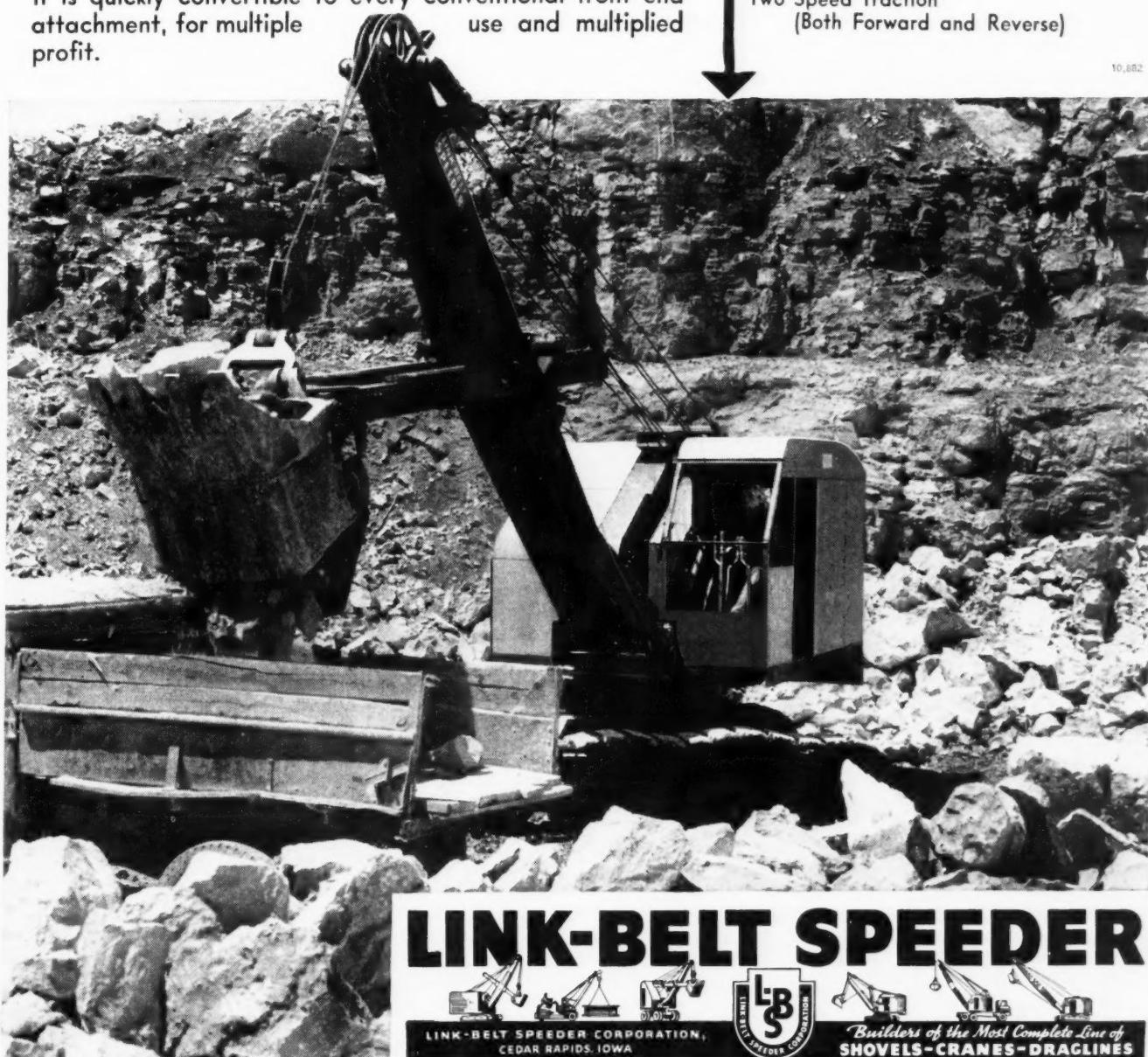
Glass Enclosed Full Vision Cab

Comfortable Seat for Operator

Positive Traction Locking in all Directions
from Operator's Seat in Cab

Two Speed Traction
(Both Forward and Reverse)

10,882



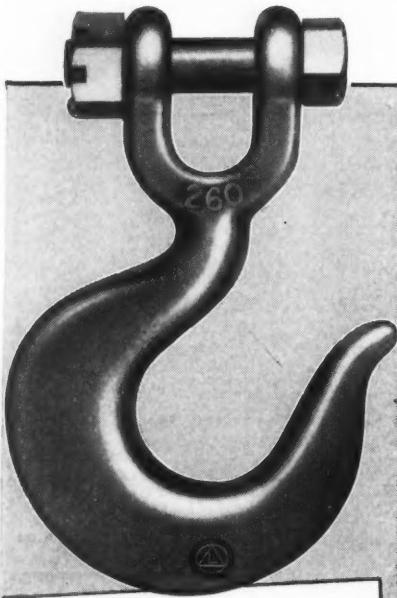
LINK-BELT SPEEDER



LINK-BELT SPEEDER CORPORATION,
CEDAR RAPIDS, IOWA

Builders of the Most Complete Line of
SHOVELS-CRANES-DRAGLINES

FITTING NEWS!



**NEW CLEVIS HOOK
BY LAUGHLIN
OFFERS UNIQUE
ADVANTAGES**

- **QUICK** and easy to attach with bolt, slotted nut and cotter. No welding . . . no special fittings needed.
- **SAFE** . . . meets highest safety requirements . . . hook and bolt made of drop-forged, heat-treated steel.
- **EASY** to change . . . easy to switch from job to job as needed.
- **FITS** wire rope . . . chain . . . many block straps.
- **SUPPLIED** with Safety Latch or with reversed jaw on special order.

Send for Catalog No. 140

THOMAS LAUGHLIN CO.
DEPARTMENT 1, PORTLAND 6, MAINE

LAUGHLIN



THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS



Truck and Coach Division of General Motors Corp. recently announced the introduction of an improved line of light and medium duty trucks with an entirely new and bigger cab. Prices on these new FC models, ranging from 4,600 to 18,000 lb. gross vehicle weight, are from \$55.00 to \$162.00 higher than comparable models in the old line, according to **M. D. Douglas**, general manager.

Electric Steel Foundry of Portland, Ore., has established an eastern manufacturing plant at Danville, Ill., to produce ESCO dragline buckets and dippers. The plant is supervised by **Vincent J. Shanahan**.

The Four Wheel Drive Auto Co., Clintonville, Wis., has been conducting a series of dealers' service training schools to train service men employed by FWD dealers in factory-approved methods of servicing FWD trucks. Instructions are given in lubrication, adjustments, operation and maintenance. The men even disassemble and re-assemble every unit of every model, including motors, axles, transmissions, steering mechanism, and brakes.

A new synthetic rubber is being produced by The General Tire & Rubber Co. which, it is claimed, comes much closer to equaling all the advantages of natural rubber than anything heretofore available.

Belief that it can hold the price line on window and plate glass as a curb to rising building construction costs has been expressed in Toledo, Ohio, by the Libbey-Owens-Ford Glass Co. as the outgrowth of a mutual pledge by management and labor calling for increased production. **G. P. MacNichol, Jr.**, vice-president in charge of sales, notified customers that the company policy of guaranteeing glass prices on identified construction projects will continue and be extended to cover Thermopane, the company's insulating window.

H. M. Hammond, vice-president, Bailey Meter Co., announces that the last members of the 1946-47 cadet engineering class have been assigned to branch offices. **J. H. Wilson** reported to Cincinnati and **R. W. May** to New York.

Gustave Treffiesen has been made sales manager of the Alemite distribution division of Stewart-Warner Corp., succeeding **Charles I. Kraus**, who becomes distributor at Minneapolis, Minn.

NOW "VENTUBE" IS MADE WITH NEOPRENE...

Tough, durable neoprene coating makes flexible ventilating duct even better than prewar type!



- **LIGHTER IN WEIGHT**
- **MORE FLEXIBILITY**
- **EASIER TO COUPLE**
- **STANDS UP TO ACID**
- **RESISTS HEAT, AGING**

We're glad we can now give you more value in your "Ventube"** than ever before—with tough, durable neoprene, the Du Pont synthetic rubber that gives such unusual service in conveyor belts, cable-jacketing and other equipment. "Ventube" is now coated with neoprene, and the "Ventube" fabric is thoroughly impregnated with a neoprene composition engineered to give long life and trouble-free service.

Many advantages of the new material: (1) Much more flexible for carrying air around curves and corners, for coupling and uncoupling; (2) Much lighter in weight, for lifting and carrying long lengths, and

(3) Neoprene is long-lasting, withstands corrosive acid or alkali waters, resists oxidation from heat and aging. Not only better than wartime types, but even better than prewar "Ventube."

And remember that regular "Ventube," attached to a motor-driven blower fan of adequate capacity, delivers fresh air to men at work and that bad air and dust can be drawn off by the use of helical-type "Ventube" attached to a motor-driven exhaust fan. "Ventube" keeps temperatures low enough for efficiency, reduces down-time after tunnel blasting, speeds production in many ways, cuts accidents. It is easy to install, to move, to store. Low in both original and upkeep cost.

For further details, consult Du Pont Technical Service, Fabrics Division, E. I. du Pont de Nemours & Co. (Inc.), Fairfield, Conn.

**"Ventube" is Du Pont's registered trademark for its flexible, synthetic-rubberized ventilating duct.

DU PONT "VENTUBE"

DUPONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

FOR LOWER PRODUCTION COSTS
THROUGH BETTER VENTILATION

SAFE FOR UNUSUAL LOADS...

Heavy duty trailers from 5 to 100 tons with any wheel or axle combination.



It takes a sturdy, well designed and properly constructed trailer to safely transport unusual and unbalanced loads. Heavy hauling is ALWAYS SAFE with a JAHN TRAILER.

C. R. JAHN COMPANY
Dept. 1335, 1106 W. 35th Street,
Chicago 9, Illinois



• UNLOADS AUTOMATICALLY
• 2 to 1 RATIO
One-Man operation...Clamps to
Scaffold, Ideal for Brick, Tile,
Blocks, Mortar and many other
construction items.
\$59⁵⁰ You can have Clipper
Hoists on FREE TRIAL
Write for Literature!
Brick Clamps \$5.50 ea.
Tile Clamps \$4.50 ea.

CLIPPER MFG. CO.
2800 WARWICK • KANSAS CITY 8, MO.
Factory Branches
Philadelphia St. Louis Austin, Texas

CLIPPER PORTABLE HOISTS
by the Makers of
CLIPPER MASONRY SAWS

The Chicago Pneumatic Tool of New York recently announced the opening of a new branch office at 528 11th Street, Rock Island, Ill. It will be under the jurisdiction of the Chicago district office, of which **G. C. VandenBoom** is district manager. **J. C. Wisner** and **A. B. Rudstrom** will handle sales and service in the Rock Island office. Both men are well-known in eastern Illinois and Iowa, having previously covered this area for the Chicago branch of the company.

Henry J. Kaiser's Permanente Metals Corp. has announced the development at its Spokane rolling mills of an aluminum utility sheet, which is claimed to be particularly adaptable to industrial, farm and residential applications where bending, lock seam joining, light weight, non-rusting characteristics and ease of handling are desirable.

About 350 Fenestra representatives from all parts of the U. S. will attend a national sales convention at Detroit, Mich., Sept. 18-20—the first the Detroit Steel Products Co. has held since 1940.

Increasing demands for Caterpillar diesel industrial and marine engines and electric sets have called for additional personnel in branches of the H. O. Penn Machinery Co., Inc. To serve in the New York City coastal area, **M. J. Vanden Bosch** has joined the sales staff. Long Island territory is being covered by **William Morrison**.

For operating without a lost-time accident during the year 1946 the Hannibal, Mo., plant of the Universal Atlas Cement Co., subsidiary of the U. S. Steel Corp., recently was awarded the safety trophy of the Portland Cement Association. The plant had 1,026,725 man-hours of accident-free operation last year.

J. K. Rector, formerly assistant advertising manager of E. W. Bliss Co., has been appointed advertising and sales promotion manager of the Watson-Stillman Co., Roselle, N. J., manufacturers of hydraulic machinery and mill distributors' products.

D. H. McNaughton has been appointed assistant to the sales manager of the Insley Manufacturing Co., Indianapolis, Ind., makers of power shovels and cranes. Mr. McNaughton succeeds **I. Kenneth Ackmann**, who becomes service manager of the newly-established Insley service depot in Seattle, Wash.



COORDINATED *Digging*

ALL THROUGH THE SHIFT

**BUCYRUS
ERIE**

The smoothly coordinated action of Bucyrus-Erie shovels makes digging a rhythmic dig-swing-dump routine that quickly piles up big output. Behind this precision blending of operating functions is responsive, full-feel control that practically "puts the load in the operator's hand."

Whether he is swinging, crowding, hoisting, or propelling . . . whether he is just starting the shift or finishing up . . . the operator gets exactly the power response he wants. The big cool-running clutches are self-adjusting for temperature variations, respond to lever action with a softness that eliminates jerks. The large brakes have high holding power, yet pedal pressures are low. Operating levers are long enough for plenty of feel, short enough

for easy operation; a given pressure always effects the same response. Levers are conveniently arranged, too, so that the operator finds them all within easy reach.

These are a few of the reasons why operators of Bucyrus-Erie $\frac{3}{8}$ - to $2\frac{1}{2}$ -cu. yd. excavators can maintain a high-speed clip all through the shift, regardless of front-end type. See your Bucyrus-Erie distributor for more details about the control that gives these machines a head start in any kind of digging. And don't fail to ask about their easy convertibility for operation as shovel, dragline, crane or clamshell.

102E47

BUCYRUS-ERIE COMPANY
SOUTH MILWAUKEE, WISCONSIN

LUFKIN
CHROME CLAD
"PEERLESS"
STEEL TAPE



Construction men can't take time or trouble to baby a measuring tape when they're busy on the job. That's why so many prefer the Lufkin "Peerless" Chrome Clad Steel Tape. Flexible $\frac{1}{4}$ " steel line is covered with smooth, rust-resistant chrome that will not crack, chip, or peel. Jet black markings are always easy to read — they won't wear out. Get the best — buy the Lufkin "Peerless" Chrome Clad Steel Tape from your dealer. Write for free catalog.

LUFKIN

THE LUFKIN RULE COMPANY
 SAGINAW, MICHIGAN, New York City

Farmall Works is planning an addition to its manufacturing space, L. M. Gildea, works manager of International Harvester's Rock Island, Ill., tractor plant, has announced.

Armstrong Cork Co. is planning construction of a modern laboratory on a 40-acre site three miles from Lancaster, Pa.

New Holland Metals Co., Leola, Pa., is offering aluminum corrugated and 5v-crimp roofing and siding, plain aluminum ridge roll and aluminum roofing nails, as well as aluminum plain sheets for heating and ventilating duct work.

E. A. Buxton has been elected chairman of the committee on steel pipe research of the American Iron and Steel Institute, succeeding E. P. Corey retiring after 52 years in the steel pipe industry.

Return of Larry H. Coffin to Akron, Ohio, as assistant to George K. Hinshaw, vice-president and production manager of Goodyear Tire & Rubber Co.'s foreign operations, has been announced. Coffin has been plant manager for the company in Sao Paulo, Brazil, since 1942.

E. Harold Lusty is assistant to the president in charge of sales and advertising for the Good Roads Machinery Corp., Detroit, Mich.

Harold C. Anderson, who joined the Thermoid Co. in 1945, has been elected vice-president of research engineering and development of the company at Trenton, N. J.

William C. Krecklow, who started with Allis-Chalmers, Milwaukee, Wis., in 1910 as an office boy, is now production control manager of the West Allis general machinery works, succeeding Harold A. Wallace, resigned.

Permanente Metals Corp. announces that Milt Eisele will head its newly created building materials division. The corporation also announced appointment of E. B. Dodds as head of the roofing and siding division of Permanente Products Company, distributors of the new Kaiser aluminum product in the eleven Western states.

Appointment of Roger G. DeLong as manager and of W. B. Gibson as sales manager of the hydraulic division of the Twin Disc Clutch Co. at Rockford, Ill., has been announced.

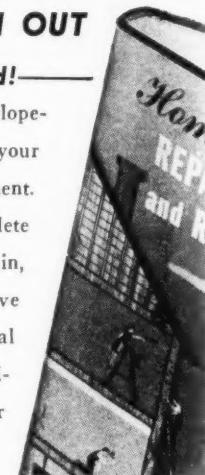
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This new book shows you how to REPAIR and REMODEL

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3 each Twin City, 4-cylinder engines 8" x 9" gasoline.

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All engines in good condition.

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Complete stock of repair parts for all machines listed.

ALL EQUIPMENT LISTED ABOVE CAN BE PURCHASED AT ATTRACTIVE PRICES. PRICES SUPPLIED UPON REQUEST.

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Telephone Somerset 390

FULL VIEW... JOB AHEAD WITH SITTING COMFORT

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\$15

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\$1200.00

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\$1150.00

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F. S. WARLICK
3528 South Utah St. Arlington, Va.

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5 Model FDT-47W, 9 yard bottom dump—150 H.P. Cummins—21:00x24 drive tires. Good working condition.

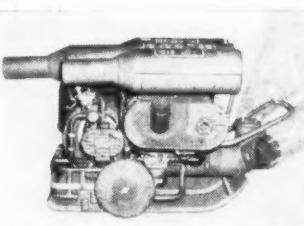
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15 each Model 1ZWCL 8 cubic yard Euclid Bottom Dump-Model 6SRKR Waukesha Motor-gasoline. These units are equipped with attachable coal extension bodies which increases capacity to 13 cubic yards. All in fair condition.

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War Department Contract W-04-470

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Handle Wood Form Prefabrication
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Stock

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CARPENTER (Millwright)

Saw Filer

Tension & Sharpen Resaw or Band
Blades, Straighten & Sharpen Cir-
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matic Sharpening Equip.

Experience Profile Grinding

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Mold Loft-Marinship-Sausalito, Calif.
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Sausalito, Calif.



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the fellow you didn't expect to see here . . . and I make these Sturdybird construction toys. They're the real thing in miniature and good . . . like the big equipment they're patterned after.

I've been thinking what I'd do if I was in the construction business in a big way and I wanted to remember my customers' kids at Christmas. I'd give 'em these Sturdybirds! Boy, wouldn't a real construction-minded youngster go for that! And it wouldn't take his dad's mind off the fact that I've got some real equipment myself that should be working for him. How's that for a hint? I'll take your check and send your customer the best boy's Christmas present of all time."

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(Ohio residents only add 3% Ohio Sales Tax)
- Ship to us. Ship to attached customer address list.

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____
COMPANY NAME TO BE STENCILED ON TOYS (Print)

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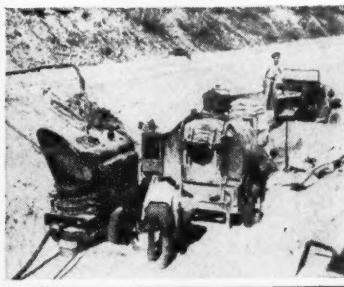
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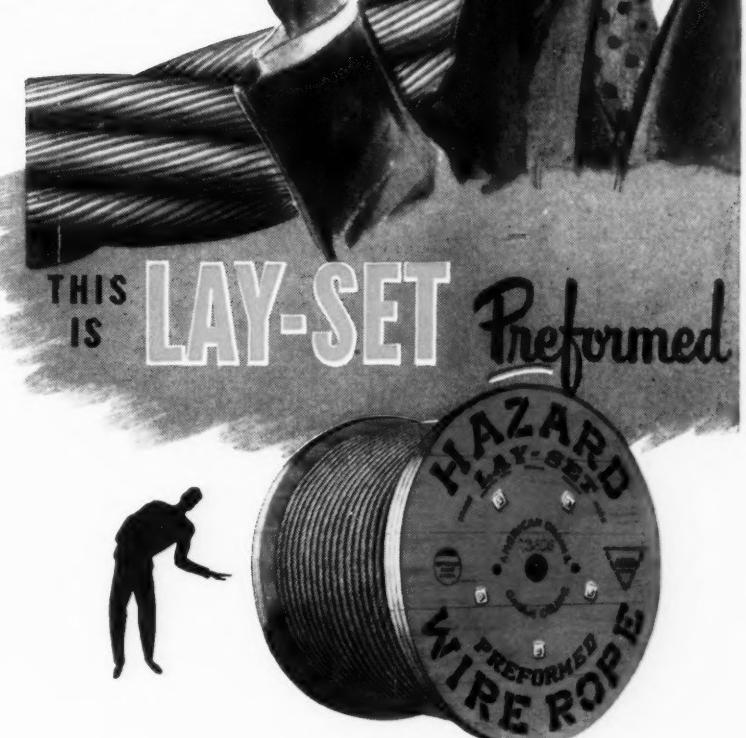
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WATERLOO, IOWA



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